Appendix D
Traffic Study

DRAFT

CITY OF LONG BEACH
SEAPORT MARINA PROJECT
TRAFFIC IMPACT REPORT

Prepared for

City of Long Beach
Department of Planning and Building
Planning Bureau

Prepared by

Meyer, Mohaddes Associates
a business unit of Iteris, Inc.

August 2006

J05-1601

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August 2006

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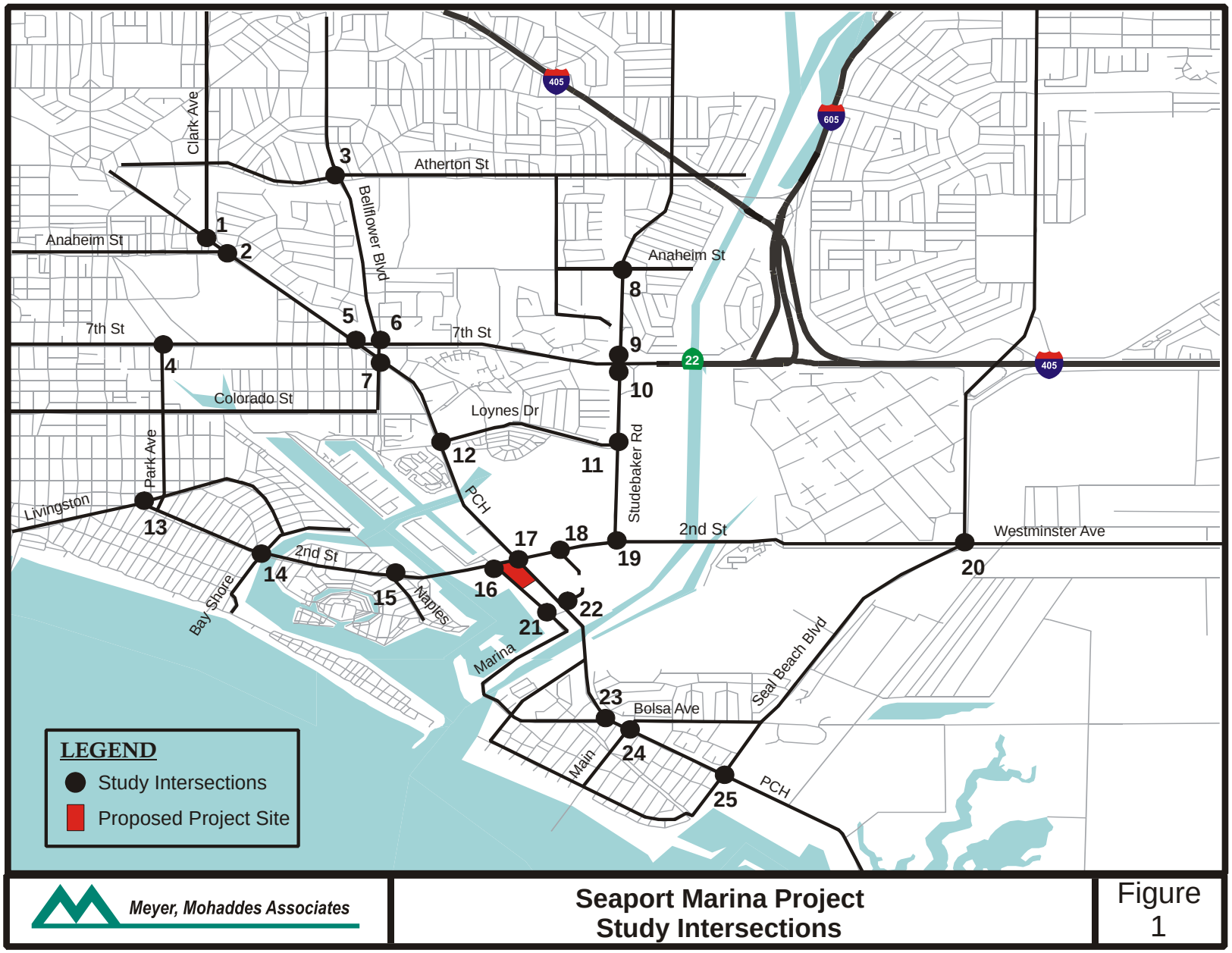
INTRODUCTION AND ENVIRONMENTAL SETTING

This report summarizes the results of a traffic impact analysis that was undertaken for the proposed Seaport Marina Project development (hereafter known as the Project) located in the City of Long Beach. The report summarizes the methodology, findings and conclusions of that traffic analysis. A total of 25 intersections in the vicinity of the Project site were analyzed. The analysis considered new vehicle trip making that will result from the Project, as well as traffic growth from other developments (background growth and identified related projects) in the surrounding area. The study covers local and arterial roadways serving the project site. County of Los Angeles Congestion Management Program (CMP) guidelines were also used to assess the designated CMP roadway system.

Study Area

Figure 1 depicts the study area, the locations of the analyzed intersections, and the location of the Project. Based on consultation with the City of Long Beach, 25 key intersections were selected for analysis. These are intersections deemed most likely to experience significant impacts from the Project and therefore warrant detailed analysis. The 25 study intersections are:

- 2nd Street & Bay Shore Avenue
- 2nd Street & Livingston Drive
- 2nd Street & Marina Drive
- 2nd Street & Naples Plaza
- 2nd Street & Pacific Coast Hwy (SR 1)
- 2nd Street & Shopkeeper Road
- 2nd Street & Studebaker Road
- 7th Street & Bellflower Blvd
- 7th Street & Pacific Coast Hwy (SR 1)
- 7th Street & Park Avenue
- Anaheim Street & Pacific Coast Hwy (SR 1)
- Anaheim Street & Studebaker Road
- Atherton Street & Bellflower Blvd.
- Loynes Drive & Pacific Coast Hwy (SR 1)
- Loynes Drive & Studebaker Road
- Main/Bolsa Ave & Pacific Coast Hwy (SR 1 – City of Seal Beach)
- Marina Drive & Pacific Coast Hwy (SR 1 – City of Seal Beach)
- Marina Drive & Studebaker Road
- Pacific Coast Hwy & Bellflower Blvd
- Pacific Coast Hwy (SR 1) & Clark Avenue
- Seal Beach Blvd & Pacific Coast Hwy (SR 1 – City of Seal Beach)
- SR 22 E On-Ramp & Studebaker Road
- SR 22 W On-Ramp & Studebaker Road
- Studebaker Rd & Pacific Coast Hwy (SR 1)
- Westminster Ave & Seal Beach Blvd (City of Seal Beach)


Clark Ave
Atherton St
Bellflower Blvd
Anaheim St
7th St
Colorado St
Loynes Dr
Park Ave
Livingston
PCH
Studebaker Rd
2nd St
Westminster Ave
Bay Shore
Naples
Marina
Seal Beach Blvd
Bolsa Ave
Main
405
605
22
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
LEGEND
Study Intersections
Proposed Project Site
Meyer, Mohaddes Associates
Seaport Marina Project
Study Intersections
Figure
1

Of the 25 study intersections, two are currently controlled by stop signs on the minor street approaches. The remaining 23 study intersections are controlled by traffic signals. The two stop-sign controlled intersections are:

- Marina Drive & Studebaker Road
- Marina Drive & Pacific Coast Highway (SR 1).

Four of the study intersections are located within the City of Seal Beach, and have been analyzed using Seal Beach standards. These intersections are:

- Westminster Avenue & Seal Beach Boulevard
- Marina Drive & Pacific Coast Highway (SR 1)
- Pacific Coast Highway (SR 1) & Bolsa Avenue/Main Street
- Pacific Coast Highway (SR 1) & Seal Beach Boulevard.

Project Description/Background

The proposed project site is bound by 2nd Street to the north, the Marina Shores Shopping Center to the south, East Marina Drive to the west and Pacific Coast Highway to the east, and consists of approximately 10.9 acres of land. The site is currently developed and is mainly occupied by the Seaport Marina Hotel.

The proposed project site is located approximately five miles east of Downtown Long Beach and one mile south of the San Diego Freeway (I-405). As shown in Figure 2, the Preliminary Site Plan, vehicular access will be provided via the existing system of roadways, with direct access from Pacific Coast Highway and Marina Drive. The project site is located in an urbanized area with retail, commercial, and industrial uses located along the major roadways bordering the site. Land uses in the vicinity include the Alamitos Bay Marina, The Marketplace and Marina Shores retail centers, a Chevron gas station, and City National Bank. The area along Marina Drive, north of 2nd Street is developed with residential uses, and the surrounding mixed-use development consists of one- to four-story buildings.

The proposed Seaport Marina Project includes the development of approximately 425 residential units and approximately 170,000 square feet of retail development as shown in the Site Plan. Demolition of the existing Seaport Marina Hotel (164,736 square feet) would be required for implementation of the proposed project.

Parking for the proposed project would be in above and below grade parking structures and would consist of approximately 1,730 spaces, in compliance with the City of Long Beach Parking Code. In addition, the proposed project includes improvements to Marina Drive (between 2nd Street and Studebaker Road) and the City-owned parking lot west of Marina Drive to allow for additional parking.

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Seaport Marina Project
Site Plan

Figure 2

Construction activities associated with the proposed project would include demolition, site clearance/excavation and building erection. It is anticipated that project construction will be completed in approximately 22 months. Construction is tentatively scheduled to begin in the fall of 2007, with completion anticipated by summer 2009.

Key Roadway Descriptions

The following describes key roadways within the study area:

2nd Street provides an east-west linkage in the study area, this arterial, along with Pacific Coast Highway, will provide access to the proposed site. Second Street is classified as a minor arterial west of Pacific Coast Highway and is classified as a major arterial east of Pacific Coast Highway according to the City of Long Beach functional classification of streets system. Second Street is named Westminster Avenue once it enters Orange County. Near the proposed project site, 2nd Street has three lanes in both the east and westbound direction, with a posted speed limit of 35 MPH. The average daily traffic (ADT) along 2nd Street in the study area ranges between 40,000 and 45,000 vehicles per day.

Pacific Coast Highway provides a direct north-south linkage to the proposed project's eastern access points. Pacific Coast Highway is classified as a regional corridor, and is also known as State Route (SR) 1. Adjacent to the project site, Pacific Coast Highway has three lanes in both the north and southbound direction. Within the study area, the posted speed limit ranges between 40 and 50 MPH. The ADT in the study area along Pacific Coast Highway ranges between 40,000 and 45,000 vehicles per day.

Studebaker Road provides an indirect north-south linkage to the project site via 2nd Street. Studebaker Road is classified as a major arterial with Pacific Coast Highway to its west and Seal Beach Boulevard to the east. Near the project site, Studebaker Road has two lanes traveling in both the north and southbound direction. Within the study area the posted speed limit ranges between 45 and 50 MPH. The ADT in the study area along Studebaker Road ranges between 35,000 and 40,000 vehicles per day.

7th Street provides an indirect east-west linkage to the project site via Pacific Coast Highway. Seventh Street is classified as a major arterial with three lanes in both the east and westbound direction. Within the study area, the posted speed limit ranges between 35 and 40 MPH. The ADT to the west of Pacific Coast Highway ranges between 45,001 and 50,000 vehicles per day, and the ADT to the east of Pacific Coast Highway ranges between 55,000 to 60,000 vehicles per day.

Bellflower Boulevard provides an indirect north-south linkage to the project site via Pacific Coast Highway. Bellflower Boulevard is classified as a major arterial with three lanes in both the north and southbound direction. Within the study area, the posted speed limit is 40 MPH and the ADT ranges between 20,000 and 25,000 vehicles per day.

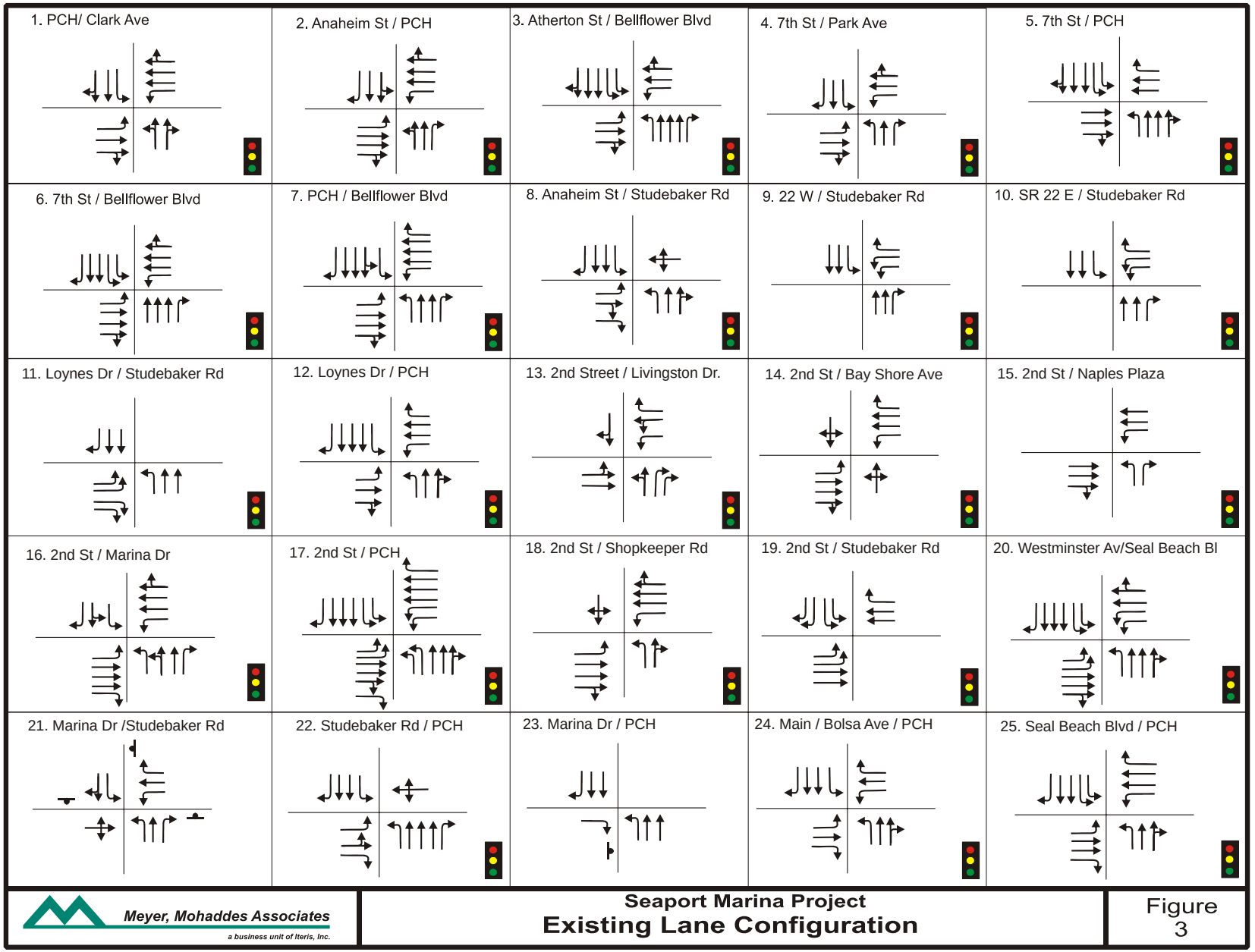
EXISTING CONDITIONS

Traffic Data Collection

An extensive field review was undertaken to establish existing traffic operations and included review of the following existing conditions:

- Intersection geometric layout
- Lane configuration
- Posted speed limits
- Signal phasing
- Land uses
- Curbside parking
- Bus stop locations

Additional tasks conducted as part of the scoping phase of the traffic study included the verification of the project description, trip generation rates, ambient growth factors, trip distribution patterns, study intersections to be analyzed, and any special issues to be addressed in this traffic study. The status of the existing buildings and building sites within the Project site and influence area was also noted. The existing lane configurations are illustrated in Figure 3. Note at the intersection of 2nd Street and Pacific Coast Highway, the City of Long Beach has a current improvement project that adds an additional lane on southbound Pacific Coast Highway as it approaches the intersection. The existing lane configuration drawing as well as all existing conditions analyses assume this improvement to be complete and in place since it will be completed prior to the date of project opening.


1. PCH/ Clark Ave
2. Anaheim St / PCH
3. Atherton St / Bellflower Blvd
4. 7th St / Park Ave
5. 7th St / PCH
6. 7th St / Bellflower Blvd
7. PCH / Bellflower Blvd
8. Anaheim St / Studebaker Rd
9. 22 W / Studebaker Rd
10. SR 22 E / Studebaker Rd
11. Loynes Dr / Studebaker Rd
12. Loynes Dr / PCH
13. 2nd Street / Livingston Dr.
14. 2nd St / Bay Shore Ave
15. 2nd St / Naples Plaza
16. 2nd St / Marina Dr
17. 2nd St / PCH
18. 2nd St / Shopkeeper Rd
19. 2nd St / Studebaker Rd
20. Westminster Av/Seal Beach Bl
21. Marina Dr /Studebaker Rd
22. Studebaker Rd / PCH
23. Marina Dr / PCH
24. Main / Bolsa Ave / PCH
25. Seal Beach Blvd / PCH
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Seaport Marina Project
Existing Lane Configuration
Figure 3

Traffic Count Data

The project is located along major commuter routes, as well as beach traffic routes. In order to evaluate the impacts of traffic in the study area, peak hour turning movement traffic counts were taken at the project study locations in both July 2005 (referred to as Summer Counts) and October 2005 (School Counts). Turning movement traffic counts were collected during the morning (7-9 AM) and afternoon (4-6 PM) peak periods during a weekday, and during the mid-day (1-3 PM) on a Saturday. An extensive comparison was made between the two sets of count data.

Review of the traffic count data showed that during the weekday AM and PM peak periods, the overall traffic volumes were higher in the October traffic counts. This is typical for a weekday period; in fact, weekday traffic counts are typically collected during the non-summer periods since the volumes tend to be larger, and therefore more conservative for analysis, while work and school commuters are at their peak.

Due to the proximity of the beaches and recreational areas, it was found that the Saturday July counts were higher than the Saturday October counts. This may be attributed to the addition of beach and recreation traffic to the typical Saturday traffic in July.

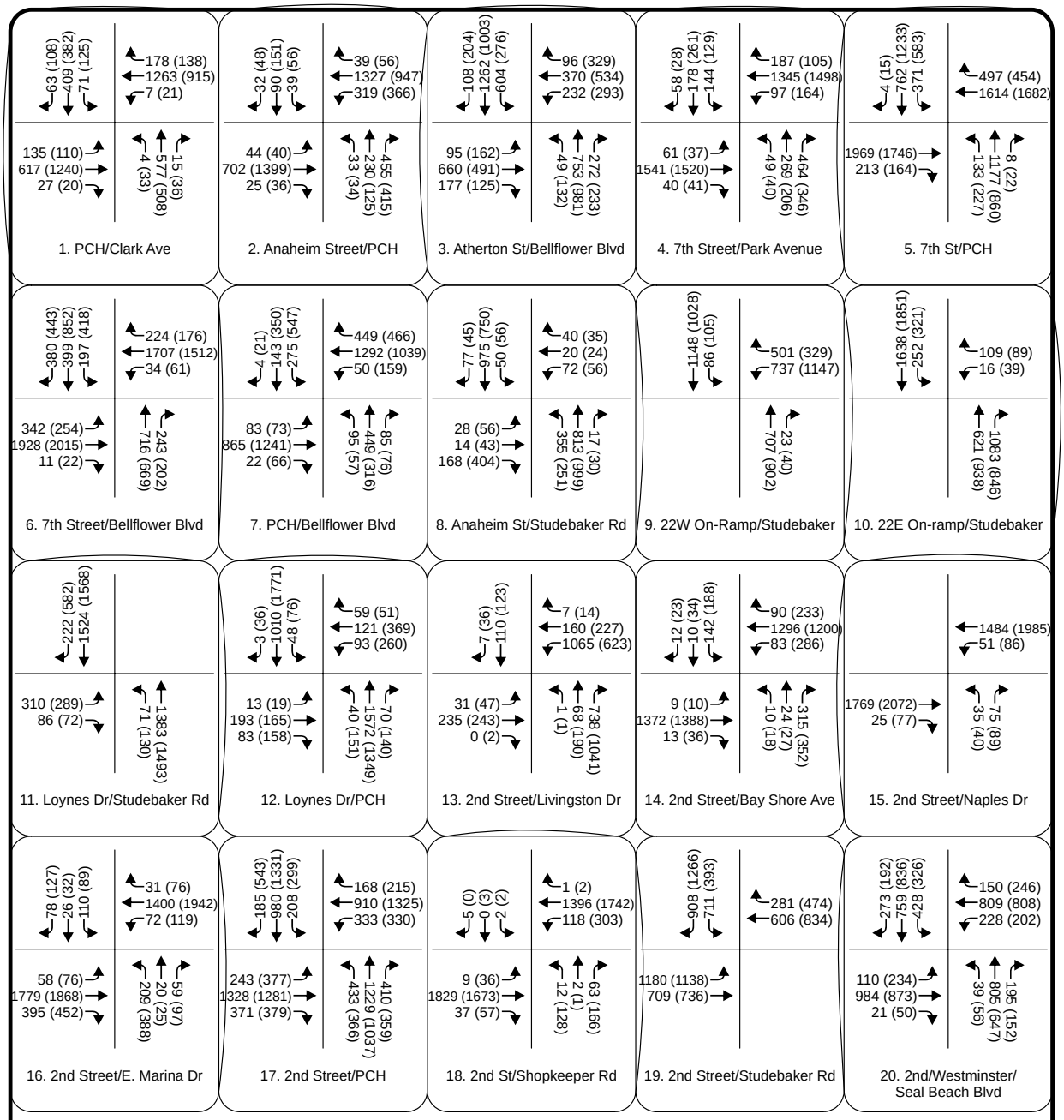
A summary of the overall combined traffic count volumes are shown in Table 1. The table shows that in the weekday AM peak period, the total vehicles counted were approximately 14 percent higher during October as compared to July. In the weekday PM peak period, the October counts were two percent higher than the counts that were taken during July. Conversely, the Saturday mid-day counts showed that the counts taken in July were almost 10% higher than the counts taken in October.

Table 1
Peak Hour Traffic Count Comparison – July vs October

Traffic Count Month	Weekday		Saturday
	AM	PM	Mid-day
July 2005	87,453	106,245	86,191
October 2005	99,688	108,369	78,013
Difference	(12,235)	(2,124)	8,178
% Higher (Lower)	(14.0%)	(2.0%)	9.5%

Therefore, in order to conduct the most conservative analysis, the traffic counts taken in October 2005 were used for the weekday analyses, and the Saturday analysis used the counts taken in July 2005.

The Saturday mid-day analysis used counts taken during the 1-3 PM peak period. The 1-3 PM time period was selected since this would tend to be the time period when retail, recreational and residential traffic would be at its peak. It was found that in the 1-3 PM peak period, 1:15 to 2:15 PM was the peak hour. Existing weekday and Saturday traffic volumes for the study intersections are illustrated in Figures 4 and 5.


1. PCH/Clark Ave
63 (108)
409 (382)
71 (125)
178 (138)
1263 (915)
7 (21)
135 (110)
617 (1240)
27 (20)
4 (33)
577 (508)
15 (36)
2. Anaheim Street/PCH
32 (48)
90 (151)
39 (56)
39 (56)
1327 (947)
319 (366)
44 (40)
702 (1399)
25 (36)
33 (34)
230 (125)
455 (415)
3. Atherton St/Bellflower Blvd
108 (204)
1262 (1003)
604 (276)
96 (329)
370 (534)
232 (293)
95 (162)
660 (491)
177 (125)
49 (132)
753 (981)
272 (233)
4. 7th Street/Park Avenue
58 (28)
178 (261)
144 (129)
187 (105)
1345 (1498)
97 (164)
61 (37)
1541 (1520)
40 (41)
49 (40)
269 (206)
464 (346)
5. 7th St/PCH
4 (15)
762 (1233)
371 (583)
497 (454)
1614 (1682)
1969 (1746)
213 (164)
133 (227)
1177 (860)
8 (22)
6. 7th Street/Bellflower Blvd
380 (443)
399 (852)
197 (418)
224 (176)
1707 (1512)
34 (61)
342 (254)
1928 (2015)
11 (22)
716 (669)
243 (202)
7. PCH/Bellflower Blvd
4 (21)
143 (350)
275 (547)
449 (466)
1292 (1039)
50 (159)
83 (73)
865 (1241)
22 (66)
95 (57)
449 (316)
85 (76)
8. Anaheim St/Studebaker Rd
77 (45)
975 (750)
50 (56)
40 (35)
20 (24)
72 (56)
28 (56)
14 (43)
168 (404)
355 (251)
813 (999)
17 (30)
9. 22W On-Ramp/Studebaker
1148 (1028)
86 (105)
501 (329)
737 (1147)
707 (902)
23 (40)
10. 22E On-ramp/Studebaker
1638 (1851)
252 (321)
109 (89)
16 (39)
621 (938)
1083 (846)
11. Loynes Dr/Studebaker Rd
222 (582)
1524 (1568)
310 (289)
86 (72)
71 (130)
1383 (1493)
12. Loynes Dr/PCH
3 (36)
1010 (1771)
48 (76)
59 (51)
121 (369)
93 (260)
13 (19)
193 (165)
83 (158)
40 (151)
1572 (1349)
70 (140)
13. 2nd Street/Livingston Dr
7 (36)
110 (123)
7 (14)
160 (227)
1065 (623)
31 (47)
235 (243)
0 (2)
1 (1)
68 (190)
738 (1041)
14. 2nd Street/Bay Shore Ave
12 (23)
10 (34)
142 (188)
90 (233)
1296 (1200)
83 (286)
9 (10)
1372 (1388)
13 (36)
10 (18)
24 (27)
315 (352)
15. 2nd Street/Naples Dr
1484 (1985)
51 (86)
1769 (2072)
25 (77)
35 (40)
75 (89)
16. 2nd Street/E. Marina Dr
78 (127)
26 (32)
110 (89)
31 (76)
1400 (1942)
72 (119)
58 (76)
1779 (1868)
395 (452)
209 (388)
20 (25)
59 (97)
17. 2nd Street/PCH
185 (543)
980 (1331)
208 (299)
168 (215)
910 (1325)
333 (330)
243 (377)
1328 (1281)
371 (379)
433 (366)
1229 (1037)
410 (359)
18. 2nd St/Shopkeeper Rd
5 (0)
0 (3)
2 (2)
1 (2)
1396 (1742)
118 (303)
9 (36)
1829 (1673)
37 (57)
12 (128)
2 (1)
63 (166)
19. 2nd Street/Studebaker Rd
908 (1266)
711 (393)
281 (474)
606 (834)
1180 (1138)
709 (736)
20. 2nd/Westminster/
Seal Beach Blvd
273 (192)
759 (836)
428 (326)
150 (246)
809 (808)
228 (202)
110 (234)
984 (873)
21 (50)
39 (56)
805 (647)
195 (152)
Legend
#
Study Intersection
XXX(XXX)
AM(PM) Peak Hour Volume
N
NOT TO SCALE
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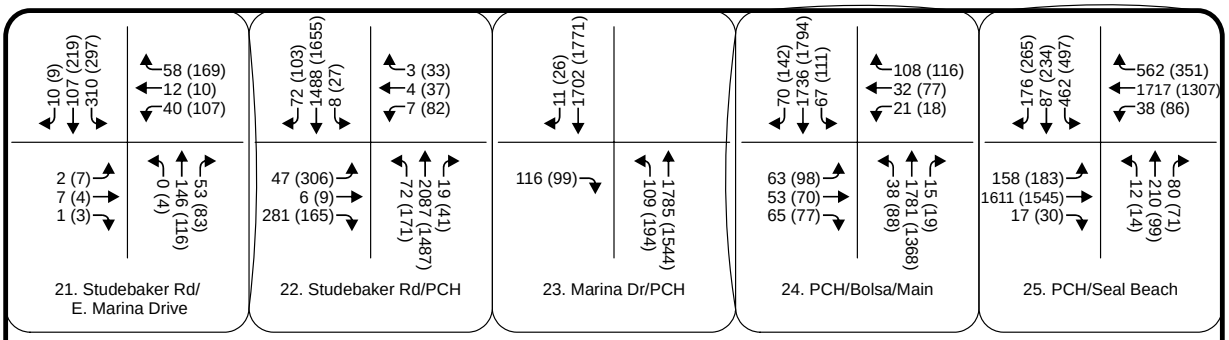
Seaport Marina Project
FIGURE 4A
Existing AM and PM Peak Hour Traffic Volumes



Legend

#	Study Intersection
XXX(XXX)	AM(PM) Peak Hour Volume

NOT TO SCALE

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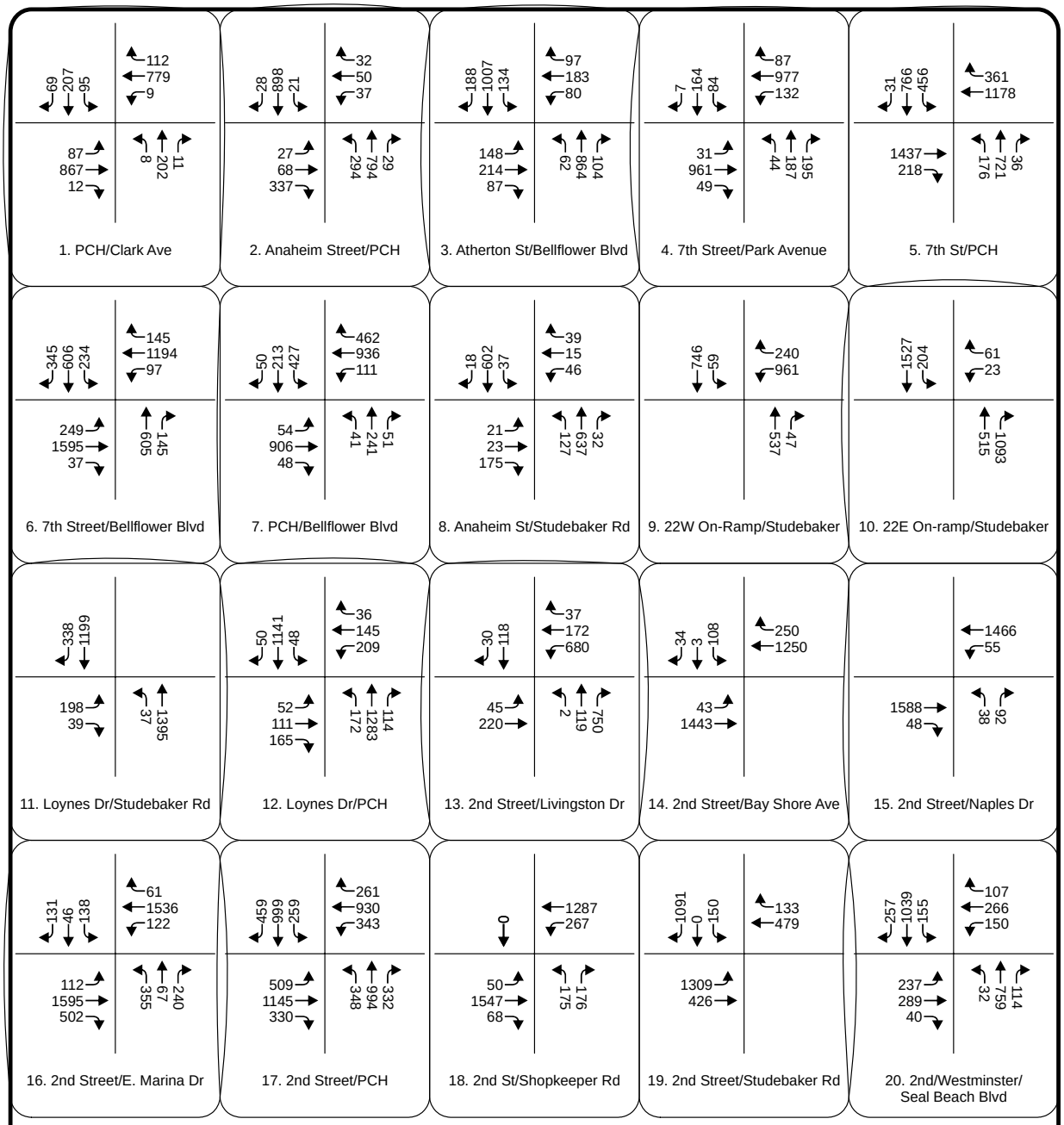
Seaport Marina Project

FIGURE 4B
Existing AM and PM Peak Hour Traffic Volumes


69 207 95
112 779 9
87 867 12
8 202 11
1. PCH/Clark Ave
28 898 21
32 50 37
27 68 337
294 794 29
2. Anaheim Street/PCH
188 1007 134
97 183 80
148 214 87
62 864 104
3. Atherton St/Bellflower Blvd
7 164 84
87 977 132
31 961 49
44 187 195
4. 7th Street/Park Avenue
31 766 456
361 1178
1437 218
176 721 36
5. 7th St/PCH
345 606 234
145 1194 97
249 1595 37
605 145
6. 7th Street/Bellflower Blvd
50 213 427
462 936 111
54 906 48
41 241 51
7. PCH/Bellflower Blvd
18 602 37
39 15 46
21 23 175
127 637 32
8. Anaheim St/Studebaker Rd
746 59
240 961
537 47
9. 22W On-Ramp/Studebaker
1527 204
61 23
515 1093
10. 22E On-ramp/Studebaker
338 1199
198 39
37 1395
11. Loynes Dr/Studebaker Rd
50 1141 48
36 145 209
52 111 165
172 1283 114
12. Loynes Dr/PCH
30 118
37 172 680
45 220
2 119 750
13. 2nd Street/Livingston Dr
34 3 108
250 1250
43 1443
14. 2nd Street/Bay Shore Ave
1466 55
1588 48
38 92
15. 2nd Street/Naples Dr
131 46 138
61 1536 122
112 1595 502
355 67 240
16. 2nd Street/E. Marina Dr
459 999 259
261 930 343
509 1145 330
348 994 332
17. 2nd Street/PCH
0
1287 267
50 1547 68
175 176
18. 2nd St/Shopkeeper Rd
1091 0 150
133 479
1309 426
19. 2nd Street/Studebaker Rd
257 1039 155
107 266 150
237 289 40
32 759 114
20. 2nd/Westminster/
Seal Beach Blvd
Legend
Study Intersection
XXX Saturday Peak Hour Volume
N
NOT TO SCALE
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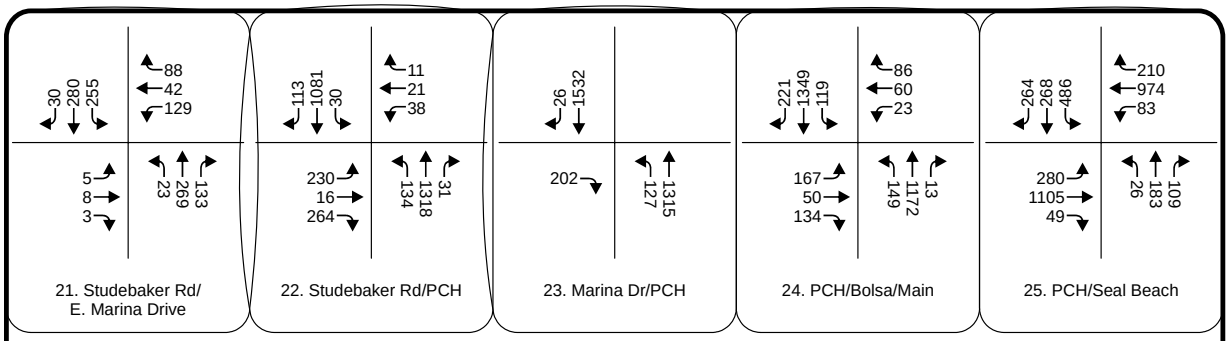
Seaport Marina Project
FIGURE 5A
Existing Saturday Peak Hour Traffic Volumes



Legend

#	Study Intersection
XXX	Saturday Peak Hour Volume

NOT TO SCALE

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Seaport Marina Project

FIGURE 5B
Existing Saturday Peak Hour Traffic Volumes

Traffic Operations Analysis Methodology

City of Long Beach Methodology

Consistent with City of Long Beach guidelines for traffic impact analyses, traffic conditions in the vicinity of the project were analyzed using intersection capacity-based methodology known as the "Intersection Capacity Utilization Methodology" which is referred to hereinafter as the ICU Method.

The efficiency of traffic operations at a location is measured in terms of Level of Service (LOS). Level of service is a description of traffic performance at intersections. The level of service concept is a measure of average operating conditions at intersections during an hour. It is based on volume-to-capacity (V/C) ratio. Levels range from A to F with A representing excellent (free-flow) conditions and F representing extreme congestion. The ICU methodology compares the level of traffic during the peak hours at an intersection (volume) to the amount of traffic that intersection is able to carry (capacity). Intersections with vehicular volumes that are at or near capacity (V/C $ 1.0) experience greater congestion and longer vehicle delays. Table 2 describes the level of service concept and the operating conditions expected under each level of service for signalized intersections.

City of Long Beach requirements state that the ICU calculations use a lane capacity of 1,600 vehicles per hour (vph) for left-turn, through and right-turn lanes; and dual left-turn lanes have a capacity of 2,880 vph. An adjustment for clearance intervals are based on the number of phases in the intersection and whether the left turn movements are permitted or protected. The clearance intervals range from 0.10 to 0.18.

Analysis of unsignalized intersections is conducted differently from signalized intersections due to different operating characteristics. Stop controlled intersections were analyzed using the delay-based Highway Capacity Manual (HCM) method of determining level of service. Table 3 also describes the level of service concept for unsignalized intersection.

Table 2
Level of Service Definitions

LOS	Interpretation	Volume to Capacity Ratio
A	Excellent operation - free-flow	0.000 - 0.600
B	Very good operation - stable flow, little or no delays	0.601 - 0.700
C	Good operation - slight delays	0.701 - 0.800
D	Fair operation – noticeable delays, queuing observed	0.801 - 0.900
E	Poor operation - long delays, near or at capacity	0.901 - 1.000
F	Forced flow – congestion	Over 1.000

Source: Highway Capacity Manual, Special Report 209, Transportation Research Board, Washington D.C., 1985 and Interim Materials on Highway Capacity, NCHRP Circular 212, 1982

Table 3
Level of Service Criteria for Unsignalized Intersections

Level of Service (LOS)	Highway Capacity Manual Average Control Delay (sec/veh)	Level of Service Description
A	< 10	Little or no delay
B	> 10 and ≤ 15	Short traffic delays
C	> 15 and ≤ 25	Average traffic delays
D	> 25 and ≤ 35	Long traffic delays
E	> 35 and ≤ 50	Very long traffic delays
F	> 50	Severe congestion

City of Seal Beach Intersection Analysis Methodology

The four study intersections located within the City of Seal Beach were evaluated in conformance with the City of Seal Beach requirements. Per City requirements, the signalized intersections were also analyzed using the ICU methodology, but with a lane capacity of 1,700 vehicles per hour (vph) for left-turn, through and right-turn lanes, and a dual left-turn capacity of 3,400 vph. A clearance adjustment factor of 0.05 was added to each level of service calculation.

Existing Traffic Operations Analysis

AM and PM peak-hour LOS analyses were conducted for the 25 study intersections based on the measured traffic volumes, geometric conditions, signal timing, and the previously described methodologies. All intersection analyses are performed using the TRAFFIX (Traffic Impact Analysis) software program. The existing conditions level of service analyses results are summarized in Table 4.

LOS D is generally considered to be the lowest acceptable LOS in an urban or suburban area. LOS E and F are considered to be unacceptable operating conditions that warrant mitigation. The results, shown in Table 4, indicate that nine of the 25 study intersections are currently operating at LOS E or F during one or more of the AM or PM weekday peak hours or Saturday peak hour. The remaining 16 intersections currently operate at LOS D or better. The nine intersections that currently operate at poor service levels are:

- Atherton Street and Bellflower Blvd (AM peak hour)
- 7th Street and Park Avenue (AM and PM peak hours)
- 7th Street and Pacific Coast Highway (AM and PM peak hours)
- 7th Street and Bellflower Boulevard (AM and PM peak hours)
- Loynes Drive and Pacific Coast Highway (PM peak hour)
- 2nd Street and Bay Shore Avenue (PM peak hour)
- 2nd Street and Pacific Coast Highway (AM, PM and Saturday peak hours)
- 2nd Street and Studebaker Road (AM peak hour)
- Studebaker Road and Pacific Coast Highway (PM peak hour)

Table 4
Existing Intersection Operating Conditions

Intersection		Existing								
		AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
		LOS	Ave Vehicle Delay	V/C Ratio	LOS	Ave Vehicle Delay	V/C Ratio	LOS	Ave Vehicle Delay	V/C Ratio
1	Pacific Coast Highway/Clark Av	C	-	0.735	C	-	0.785	A	-	0.529
2	Anaheim Street/Pacific Coast Hwy	A	-	0.577	C	-	0.732	D	-	0.825
3	Atherton St/Bellflower Blvd	E	-	0.945	D	-	0.890	B	-	0.648
4	7th Street/Park Avenue	F	-	1.035	E	-	0.987	B	-	0.667
5	7th St/Pacific Coast Highway	F	-	1.047	F	-	1.108	D	-	0.848
6	7th Street/Bellflower Blvd	F	-	1.004	E	-	0.937	C	-	0.800
7	Pacific Coast Hwy/Bellflower Blvd	C	-	0.739	D	-	0.821	C	-	0.711
8	Anaheim Street/Studebaker Road	C	-	0.768	C	-	0.706	A	-	0.498
9	SR 22W On-Ramp/Studebaker Rd	C	-	0.739	D	-	0.856	B	-	0.683
10	SR 22E On-ramp/Studebaker	B	-	0.662	C	-	0.741	B	-	0.634
11	Loynes Drive/Studebaker Rd	C	-	0.718	C	-	0.762	A	-	0.598
12	Loynes Dr/Pacific Coast Highway	D	-	0.837	E	-	0.926	D	-	0.850
13	2nd Street/Livingston Dr	B	-	0.690	B	-	0.626	A	-	0.593
14	2nd Street/Bay Shore Avenue	D	-	0.818	E	-	0.941	B	-	0.608
15	2nd Street/Naples Dr	B	-	0.611	C	-	0.776	B	-	0.616
16	2nd Street/E. Marina Drive	C	-	0.710	D	-	0.849	C	-	0.781
17	2nd Street/Pacific Coast Highway	E	-	0.967	F	-	1.028	E	-	0.928
18	2nd St/Shopkeeper Rd	B	-	0.658	D	-	0.807	C	-	0.763
19	2nd Street/Studebaker Rd	E	-	0.930	D	-	0.889	C	-	0.756
20	Westminster Ave/Seal Beach Blvd	B	-	0.686	B	-	0.681	A	-	0.446
21	Studebaker Rd/ E. Marina Drive (1)	B	10.9	-	B	12.0	-	B	13.6	-
22	Studebaker Rd/Pacific Coast Highway	D	-	0.844	E	-	0.972	C	-	0.780
23	Marina Dr/Pacific Coast Highway (1)	A	1.3	-	A	2.1	-	A	2.5	-
24	Pacific Coast Highway/Bolsa/Main	C	-	0.718	C	-	0.755	B	-	0.683
25	Pacific Coast Highway/Seal Beach	D	-	0.869	C	-	0.761	C	-	0.742

(1) denotes unsignalized intersection, overall intersection level of service is shown

Existing Transit Service

Two transit agencies provide service around the proposed project site in the City of Long Beach and the City of Seal Beach, Long Beach Transit and the Orange County Transportation Authority (OCTA). Together, Long Beach Transit and OCTA operate 22 bus routes within the boundaries of the proposed project study area as follows:

- **Long Beach Transit A Passport (Downtown Long Beach to Alamitos Bay)** – Long Beach Transit A (LBA) runs east-west through the City of Long Beach. It starts at Catalina Landing and travels west along Ocean Boulevard and 2nd Street to its final destination at Alamitos Bay Landing. Days of operation are Monday through Sunday, including major holidays. AM and PM peak period headway is approximately 24 minutes. Weekend headway for the mid-day peak period is 30 minutes.
- **Long Beach Transit D Passport (Downtown Long Beach to Los Altos)** – Long Beach Transit D (LBD) runs east-west and north-south through the City of Long Beach. LBD starts at Catalina Landing and travels west along Ocean Boulevard and 2nd Street. At Pacific Coast Highway, LBD travels north to its final destination at the Los Altos Market Center. Days of operation are Monday through Sunday, including major holidays. AM and PM peak period headway is approximately 24 minutes. Weekend headway for the mid-day peak period is 30 minutes.
- **Long Beach Transit Line 45 (Anaheim Street to Pacific Coast Highway)**- Long Beach Transit Line 45 runs east-west through the City of Long Beach, starting at Santa Fe Avenue and Anaheim Street and ending at Pacific Coast Highway and Anaheim Street. Days of operation are Monday through Friday only. No service is provided Saturday, Sunday, or major holidays. AM and PM peak period headway is approximately 12 minutes.
- **Long Beach Transit Line 46 (Downtown Long Beach to Pacific Coast Highway)**- Long Beach Transit Line 46 runs north-south and east-west through the City of Long Beach starting at Long Beach Transit Mall B. From Transit Mall B, Line 46 travels north along Long Beach Boulevard to Anaheim Street, and proceeds east along Anaheim Street to its final destination at Pacific Coast Highway. Days of operation are Monday through Sunday, including all major holidays. AM and PM peak period headway is 12 minutes during the weekday. Headway during the weekend mid-day peak period is 12 minutes on Saturday and 15 minutes on Sunday.
- **Long Beach Transit Line 81 (Downtown Long Beach to CSU Long Beach)**- Long Beach Transit Line 81 runs north-south and east-west through the City of Long Beach. Line 81 starts at the Long Beach Transit Mall and travels north to 10th Street via Pacific Avenue. At 10th and Pacific, Line 81 travels east to Studebaker Road via 10th Street and Park Avenue, and 7th Street. At 7th Street and Studebaker Road Line 81 travels north to its final destination at Atherton. Days of operation are Monday through Friday only. No service is provided Saturday, Sunday, or major holidays. AM and PM peak period headway is approximately 30 minutes.
- **Long Beach Transit Line 91 (Downtown Long Beach to the City of Bellflower)**- Long Beach Transit Line 91 runs east-west and north-south through the City of Long Beach. Line 91 starts at the Long Beach Transit Mall and travels east to Campus Road via 7th Street. At 7th Street and Campus Road, Line 91 proceeds north via Bellflower

Boulevard to its final destination at Harvard Street. Days of operation are Monday through Sunday, including major holidays. AM peak period headway is 1 hour and the PM peak period headway ranges between 24 minutes and 1 hour. Weekend headway for the mid-day peak period is 30 minutes.

- **Long Beach Transit Line 92 (Downtown Long Beach to the City of Bellflower)**- Long Beach Transit Line 92 runs east-west and north-south through the City of Long Beach. Line 92 starts at the Long Beach Transit Mall and travels east to Campus Road via 7th Street. At 7th Street and Campus Road, Line 92 travels north via Bellflower Boulevard and Woodruff Avenue to its final destination at Alondra Boulevard. Days of operation are Monday through Friday only. No service is provided Saturday, Sunday, or major holidays. AM and PM peak period headway ranges between 24-36 minutes.
- **Long Beach Transit Line 93 (Downtown Long Beach to the City of Bellflower)**- Long Beach Transit Line 93 runs east-west and north-south through the City of Long Beach. Line 93 starts at the Long Beach Transit Mall and travels east to Campus Road via 7th Street. At 7th Street and Campus Road, Line 93 travels north via Bellflower Boulevard, Clark Avenue and Lakewood Boulevard to its final destination at Bellflower Boulevard and Harvard Street. Days of operation are Monday through Friday only. No service is provided Saturday, Sunday, or major holidays. AM and PM peak period headway is 1 hour.
- **Long Beach Transit Line 94 (Downtown Long Beach to Los Altos)-** Long Beach Transit Line 94 runs east-west and north-south through the City of Long Beach. Line 94 starts at the Long Beach Transit Mall and travels east to Campus Road via 7th Street. At 7th Street and Campus, Line 94 travels north via Bellflower Boulevard to its final destination at Stearns Street. Days of operation are Monday through Sunday, including major holidays. The AM peak period headway is 1 hour, and the PM peak period headway is 1 hour until 5:18 p.m. After 5:18 p.m. the next bus is not scheduled to arrive until 11:02 p.m. Weekend headway for the mid-day peak period is 30 minutes.
- **Long Beach Transit 96 ZAP (Downtown Long Beach to Los Altos) -** The Long Beach Transit 96 ZAP is a limited stop service that starts at the Long Beach Transit Mall and runs east-west along 7th Street. At 7th Street and Campus, the 96 ZAP proceeds north via Campus and Bellflower Boulevard to its final destination at the Los Altos Market Center. Days of operation and Monday through Friday only. No service is provided on Saturday, Sunday, or major holidays. AM and PM peak period headway is 10 minutes.
- **Long Beach Transit Line 111 (Downtown Long Beach to Lakewood Center Mall) -** Long Beach Transit Line 111 runs predominately north-south through the City of Long Beach. Line 111 starts at the Long Beach Transit Mall and runs east-west along Broadway. At Broadway and Ximeno Avenue, Line 111 proceeds north to its final destination at South Street and Downey Avenue via Ximeno, Clark Avenue and Lakewood Boulevard. Days of operation are Monday through Sunday, including major holidays. AM and PM peak period headway is 30 minutes. Weekend headway for the mid-day peak period is 1 hour and 10 minutes.
- **Long Beach Transit Line 112 (Down Long Beach to Lake Center Mall) -** Long Beach Transit Line 112 runs predominately north-south through the City of Long Beach, starting at the Long Beach Transit Mall and traveling east to Ximeno Avenue via Broadway. At Ximeno Avenue, Line 112 travels north via Ximeno Avenue, Clark Avenue, and Lakewood Boulevard to its final destination at Downey Avenue and South

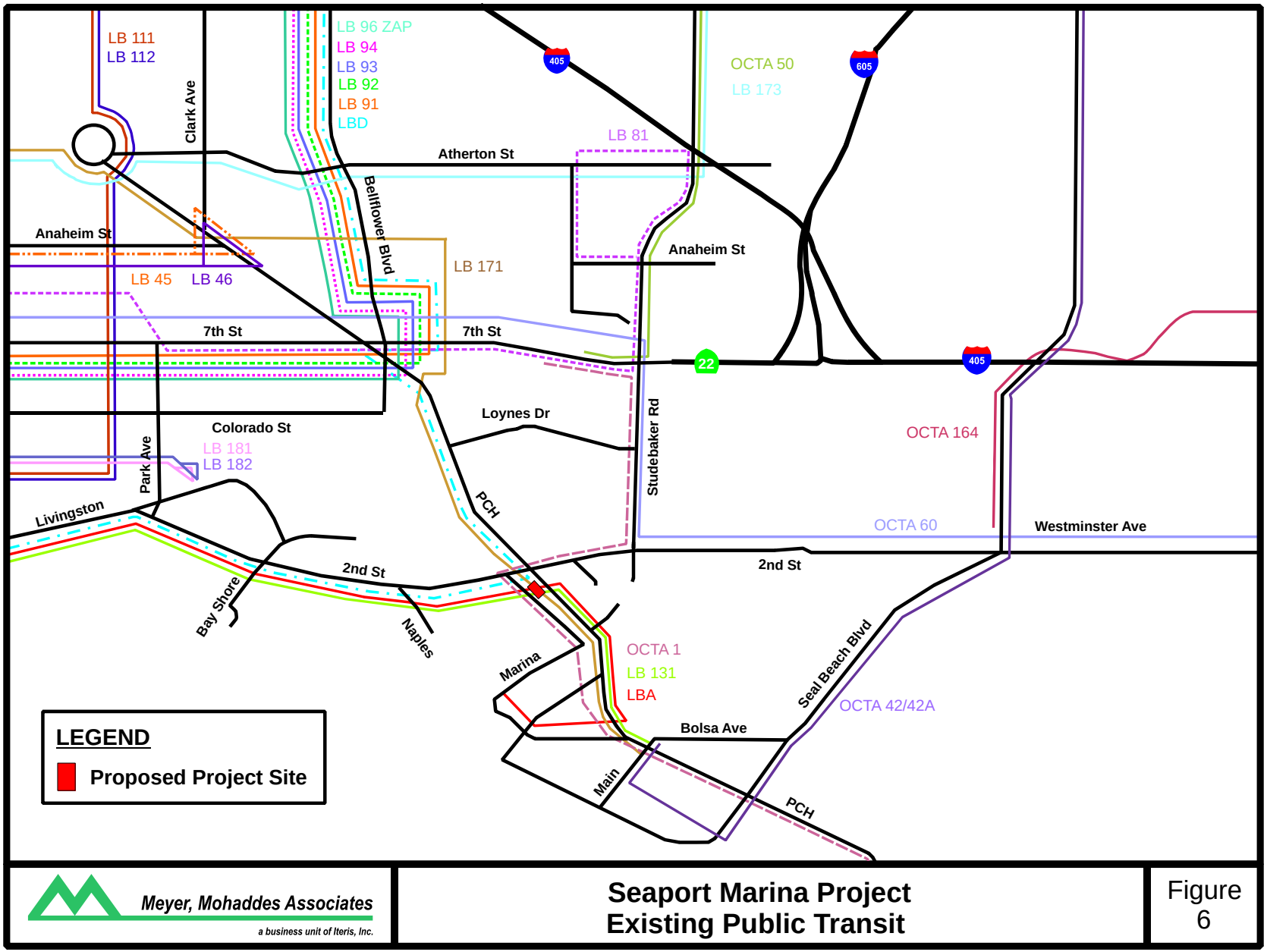
Street. Days of operation are Monday through Sunday, including major holidays. AM and PM peak hour headway is 30 minutes. Weekend headway for the mid-day peak period is 1 hour and 10 minutes.

- **Long Beach Transit Line 131 (Wardlow Station to Seal Beach)**- Long Beach Transit Line 131 runs both east-west and north-south through the City of Long Beach. Line 131 starts at the Wardlow Blue Line Station in Long Beach and travels east to Redondo Avenue via Wardlow Road and Spring Street. At Redondo Avenue, Line 131 travels south to Ocean Boulevard, then east via Ocean Boulevard, Livingston, 2nd Street, and Pacific Coast Highway to its final destination at Main and Electric Avenue. Days of operation are Monday through Sunday, including major holidays. AM and PM peak period headway is 30 minutes. Weekend headway for the mid-day peak period is 35 minutes. (NOTE: In Seal Beach Route 131 becomes Route 171 on weekdays)
- **Long Beach Transit Line 171 (Santa Fe at PCH to Seal Beach)-** Long Beach Transit Line 171 runs east-west through the City of Long Beach starting at Technology Place. From Technology Place, Line 171 travels east via Atherton Street and Pacific Coast Highway to its final destination at Electric and Main. Days of operation are Monday through Friday only. No service is provided Saturday, Sunday, or major holidays. AM and PM peak period headway is 30 minutes.
- **Long Beach Transit Line 173 (Downtown Long Beach to Norwalk Station)-** Long Beach Transit Line 173 runs both east-west and north-south through the City of Long Beach. Line 173 starts at the Long Beach Transit Mall and travels east along Pacific Coast Highway and Atherton Street. At Atherton and Studebaker Road, Line 173 proceeds north via Studebaker Road and Norwalk Boulevard to its final destination at the Norwalk Green Line Station. Days of operation are Monday through Sunday, including holidays. AM and PM peak period headway is 30 minutes. Weekend headway for the mid-day peak period is 40 minutes.
- **Long Beach Transit Line 181 (Wardlow Blue Line Station to Colorado Lagoon) -** Long Beach Transit Line 181 runs both east-west and north-south through the City of Long Beach. Line 181 starts at the Wardlow Blue Line Station and travels south along Magnolia Avenue. From Magnolia Avenue, Line 181 proceeds east via Broadway, 1st Street, and 4th Street to its final destination at 4th Street and Ximeno Avenue. Days of operation are Monday through Sunday, including major holidays. AM and PM peak period headway is 30 minutes. Weekend headway for the mid-day peak period is 40 minutes.
- **Long Beach Transit Line 182 (Wardlow Blue Line Station to Colorado Lagoon)-** Long Beach Transit Line 182 runs both east-west and north-south through the City of Long Beach. Line 182 starts at the Wardlow Blue Line Station and travels south to 1st Street via Pacific Place and Pacific Avenue. At 1st Street, Line 182 travels east to Long Beach Boulevard, then north to 4th Street. At 4th Street and Long Beach Boulevard, Line 182 proceeds east to its final destination at 4th Street and Ximeno Avenue. Days of operation are Monday through Sunday, including major holidays. AM and PM peak hour headway is 30 minutes. Weekend headway for the mid-day peak period is 40 minutes.
- **OCTA Route 1 (Long Beach to San Clemente via Pacific Coast Highway) -** OCTA Route 1 travels north-south, starting in San Clemente and ending in Long Beach. From San Clemente, Route 1 travels north-west along El Camino Real, Avd Vaquero, Camino, Del Prado, and Pacific Coast Highway to its final destination at 7th Street and Channel.

Days of operation are Monday through Sunday, including major holidays. The AM peak period headway ranges between 1 hour and 1 hour and 24 minutes, and the PM peak period ranges between 46 minutes and 1 hour and 12 minutes. Weekend headway for the mid-day peak period is approximately 1 hour.

- **OCTA Route 42/42A (Seal Beach to Orange via Seal Beach Blvd/Los Alamitos Blvd/Lincoln Ave)-** OCTA Route 42/42A starts in Seal Beach at Balboa and Pacific Coast Highway, and travels north along Seal Beach Boulevard and Los Alamitos. At Carson Street, Route 42/42A proceeds east via Lincoln Avenue to its final destination at The Village at Orange. Days of operation are Monday through Sunday, including major holidays. The AM peak period headway ranges between 30-40 minutes and the PM peak period headway between 30 minutes and 1 hour. The Saturday and Sunday mid-day peak period headway is 40 minutes and 30 minutes to 1 hour, respectively.
- **OCTA Route 50 (Long Beach to Orange via Katella Avenue)-** OCTA Route 50 starts at Channel and 7th Street in Long Beach and travels north along Studebaker Road. At Willow Street, Route 50 proceeds east until Willow turns into Katella, then north on Tustin to its final destination at The Village at Orange. Days of operation are Monday through Sunday, including major holidays. AM and PM peak period headway ranges between 20-30 minutes. Saturday and Sunday mid-day peak period headway is 30 minutes and 45 minutes, respectively.
- **OCTA Route 60 (Long Beach to Tustin via 7th Street/Westminster Ave/17th Street) -** OCTA Route 60 runs east-west, starting from the Transit Mall Shelter in Long Beach. From the Transit Mall Shelter, Route 60 travels north along Pacific and east along 7th Street, Westminster Avenue, and 17th Street. At 17th Street and Newport, Route 60 proceeds south to its final destination at Larwin Square in Tustin. Days of operation are Monday through Sunday, including major holidays. The AM peak period headway is approximately 24 minutes, and the PM peak period headway ranges between 25-42 minutes. Weekend mid-day peak period headway is 30 minutes.
- **OCTA Route 164 (Seal Beach to Westminster via Seal Beach Blvd/ Lampson Ave/ Edwards St)-** OCTA Route 164 begins at Leisure World in Seal Beach and travels north to Lampson Avenue via Seal Beach Boulevard. From Seal Beach Boulevard and Lampson Avenue, Route 164 travels east to Western and proceeds south via Western and Edwards Street to its final destination at the Westminster Mall area. Days of operation are Monday through Friday. No service is provided Saturday, Sunday, or major holidays. The AM peak period headway is 1 hour and 10 minutes. The PM peak period headway is also 1 hour and 10 minutes, with the last eastbound bus running at 5:20 p.m. and the last westbound bus at 6:00 p.m.

The transit routes are graphically illustrated in Figure 6.


LB 111
LB 112
Clark Ave
LB 96 ZAP
LB 94
LB 93
LB 92
LB 91
LBD
405
OCTA 50
LB 173
605
LB 81
Atherton St
Bellflower Blvd
Anaheim St
LB 171
Anaheim St
LB 45
LB 46
7th St
7th St
22
405
Loynes Dr
Colorado St
LB 181
LB 182
Park Ave
Studebaker Rd
OCTA 164
PCH
Livingston
OCTA 60
Westminster Ave
2nd St
2nd St
Bay Shore
Naples
Marina
OCTA 1
LB 131
LBA
Seal Beach Blvd
OCTA 42/42A
Bolsa Ave
Main
PCH
LEGEND
Proposed Project Site
Meyer, Mohaddes Associates
a business unit of Iteris, Inc.
Seaport Marina Project
Existing Public Transit
Figure
6

FUTURE YEAR NO-BUILD ANALYSIS

To evaluate the potential impact of the proposed project on local traffic conditions, it is first necessary to develop a forecast of future traffic volumes in the study area under conditions without the Project. This provides a basis against which to measure the Project's traffic impacts.

The buildout year of the Project is expected to be 2009. The projection of Year 2009 No-Project traffic consists of existing traffic plus ambient traffic growth (general background regional growth) plus growth in traffic generated by specific related projects expected to be completed by 2009. The following describes the two growth components.

Background Traffic Growth

Ambient growth is regional background growth from development and growth located outside the study area and increased activity at current land uses within the study area. Based on discussions with the City of Long Beach staff, an annual background growth rate of 1.00 percent was factored into the future traffic volumes, which equals a four percent growth rate by the horizon year. All traffic studies conducted for projects located in the City of Long Beach in recent history have used a 1% annual traffic growth rate. This rate is slightly higher, and thus more conservative, then the calculated Congestion Mitigation Plan (CMP) growth rate of 0.7% per year for the Long Beach area.

Growth From Cumulative Related Projects

In addition to ambient background growth, there are related projects in the study area that will generate future trips The City provided a list of projects within the influence area, including one project in the City of Seal Beach. It was recognized that additional traffic growth would occur from these projects. The City also provided key information and/or traffic studies for these projects. For this analysis, all related projects are assumed to be complete by the Year 2009. The related projects include: the proposed Home Depot (at Loynes Drive and Studebaker Road), an expansion of Marina Shores East (Second Street and Pacific Coast Highway) and the Boeing Specific Plan project (Seal Beach). Including these projects in this traffic study is a conservative methodology because it is likely that not all these projects will be built by 2009, some may never be built. The growth factor used to project 2005 traffic volumes to 2009 volumes also considers regional growth as well as other smaller cumulative projects.

Morning and evening weekday, and weekend peak-hour trip estimates for these related projects were obtained from their respective project traffic studies. The trips generated by the related projects were assigned to the area street system based on the directional distribution as shown in each of the traffic studies. Table 5 shows the estimated trips generated by these projects.

Table 5
Cumulative Project Trip Generation Summary

Project Name	Land Uses	Building Area(ksf)/DU	AM Peak			PM Peak			Weekend Peak		
			In	Out	Total	In	Out	Total	In	Out	Total
Home Depot	Home Improvement Retail Sit Down Restaurant	140.000 TSF 45.000 TSF 7.000 TSF	163	131	294	315	332	647	513	439	952
Boeing Seal Beach	See Specific Plan		2,054	352	2,406	473	2,117	2,590	403	341	744
Marina Shores East	Supermarket Electronics Superstore	43.000 TSF 30.000 TSF	92	60	152	196	191	387	362	343	706
Total Cumulative Trips			**2,309**	**543**	**2,852**	**984**	**2,640**	**3,624**	**1,278**	**1,123**	**2,402**

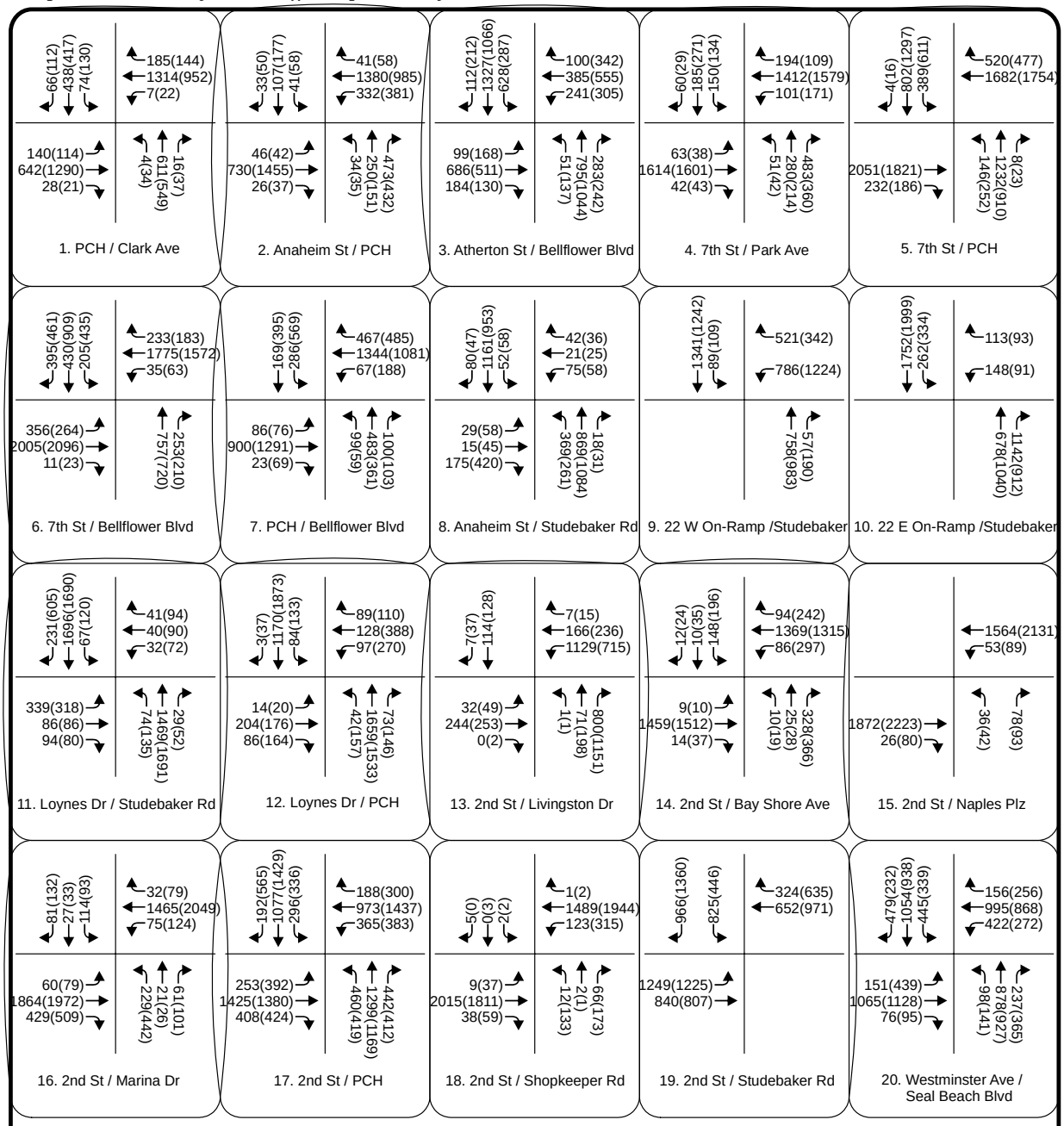
Note: Weekend peak hour trips for these projects were not contained in their respective traffic impact analyses. Weekend peak hour trips were calculated for use in this table using ITE Trip Generation rates based on each project's respective land uses, and applying similar methodologies.

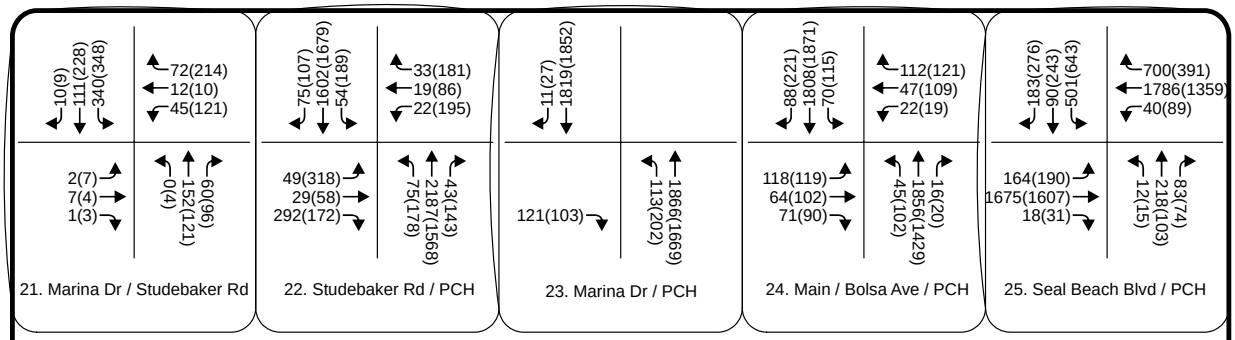
Year 2009 No-Build Traffic Operations

The projection of Year 2009 No-Project traffic consists of existing traffic plus ambient traffic growth and traffic generated by the related projects, all of which were assumed to be completed by the Year 2009. The total Year 2009 No-Build traffic volumes are illustrated in Figures 7 and 8. Based on these traffic forecasts, eleven (11) study intersections are projected to operate at LOS E or LOS F in 2009. The fourteen intersections are:

- Atherton St & Bellflower Blvd (AM and PM peak hours)
- 7th Street & Park Avenue (AM and PM peak hours)
- 7th St & Pacific Coast Highway (AM and PM peak hours)
- 7th Street & Bellflower Blvd (AM and PM peak hours)
- SR 22W On-Ramp & Studebaker Rd (PM peak hour)
- Loynes Dr & Pacific Coast Highway (PM and Saturday peak hours)
- 2nd Street & Bay Shore Avenue (PM peak hour)
- 2nd Street & Pacific Coast Highway (AM, PM and Saturday peak hours)
- 2nd Street & Studebaker Rd (AM peak hour)
- Studebaker Rd & Pacific Coast Highway (AM, PM and Saturday peak hours)
- Pacific Coast Highway & Seal Beach Blvd (AM peak hour)

Table 6 summarizes the 2009 no-build analysis results.


66(112) 438(417) 74(130)
185(144) 1314(952) 7(22)
140(114) 642(1290) 28(21)
4(34) 611(549) 16(37)
1. PCH / Clark Ave
33(50) 107(177) 41(58)
41(58) 1380(985) 332(381)
46(42) 730(1455) 26(37)
34(35) 250(151) 473(432)
2. Anaheim St / PCH
112(212) 1327(1066) 628(287)
100(342) 385(555) 241(305)
99(168) 686(511) 184(130)
51(137) 795(1044) 283(242)
3. Atherton St / Bellflower Blvd
60(29) 185(271) 150(134)
194(109) 1412(1579) 101(171)
63(38) 1614(1601) 42(43)
51(42) 280(214) 483(360)
4. 7th St / Park Ave
4(16) 802(1297) 389(611)
520(477) 1682(1754)
2051(1821) 232(186)
146(252) 1232(910) 8(23)
5. 7th St / PCH
395(461) 430(909) 205(435)
233(183) 1775(1572) 35(63)
356(264) 2005(2096) 11(23)
757(720) 253(210)
6. 7th St / Bellflower Blvd
169(395) 286(569)
467(485) 1344(1081) 67(188)
86(76) 900(1291) 23(69)
99(69) 483(361) 100(103)
7. PCH / Bellflower Blvd
80(47) 1161(953) 52(58)
42(36) 21(25) 75(58)
29(58) 15(45) 175(420)
369(261) 869(1084) 18(31)
8. Anaheim St / Studebaker Rd
1341(1242) 89(109)
521(342)
786(1224)
758(983) 57(190)
9. 22 W On-Ramp /Studebaker
1752(1999) 262(334)
113(93)
148(91)
678(1040) 1142(912)
10. 22 E On-Ramp /Studebaker
231(605) 1696(1690) 67(120)
41(94) 40(90) 32(72)
339(318) 86(86) 94(80)
74(135) 1469(1691) 29(52)
11. Loynes Dr / Studebaker Rd
3(37) 1170(1873) 84(133)
89(110) 128(388) 97(270)
14(20) 204(176) 86(164)
42(157) 1659(1533) 73(146)
12. Loynes Dr / PCH
7(37) 114(128)
7(15) 166(236) 1129(715)
32(49) 244(253) 0(2)
1(1) 71(198) 800(1151)
13. 2nd St / Livingston Dr
12(24) 10(35) 148(196)
94(242) 1369(1315) 86(297)
9(10) 1459(1512) 14(37)
10(19) 25(28) 328(396)
14. 2nd St / Bay Shore Ave
1564(2131) 53(89)
1872(2223) 26(80)
36(42) 78(93)
15. 2nd St / Naples Plz
81(132) 27(33) 114(93)
32(79) 1465(2049) 75(124)
60(79) 1864(1972) 429(509)
229(442) 21(26) 61(101)
16. 2nd St / Marina Dr
192(565) 1077(1429) 296(336)
188(300) 973(1437) 365(383)
253(392) 1425(1380) 408(424)
460(419) 1299(1169) 442(412)
17. 2nd St / PCH
5(0) 0(3) 2(2)
1(2) 1489(1944) 123(315)
9(37) 2015(1811) 38(59)
12(133) 2(1) 66(173)
18. 2nd St / Shopkeeper Rd
966(1360) 825(446)
324(635) 652(971)
1249(1225) 840(807)
19. 2nd St / Studebaker Rd
479(232) 1054(938) 445(339)
156(256) 995(868) 422(272)
151(439) 1065(1128) 76(95)
98(141) 878(927) 237(365)
20. Westminster Ave / Seal Beach Blvd
Legend
Study Intersection
XXX(XXX) AM(PM) Peak Hour Volume
N
NOT TO SCALE
Meyer, Mohaddes Associates
a business unit of Iteris, Inc.
Seaport Marina Project
FIGURE 7A
2009 No-Build AM and PM Peak Hour Traffic Volumes



Legend

#	Study Intersection
XXX(XXX)	AM(PM) Peak Hour Volume

NOT TO SCALE

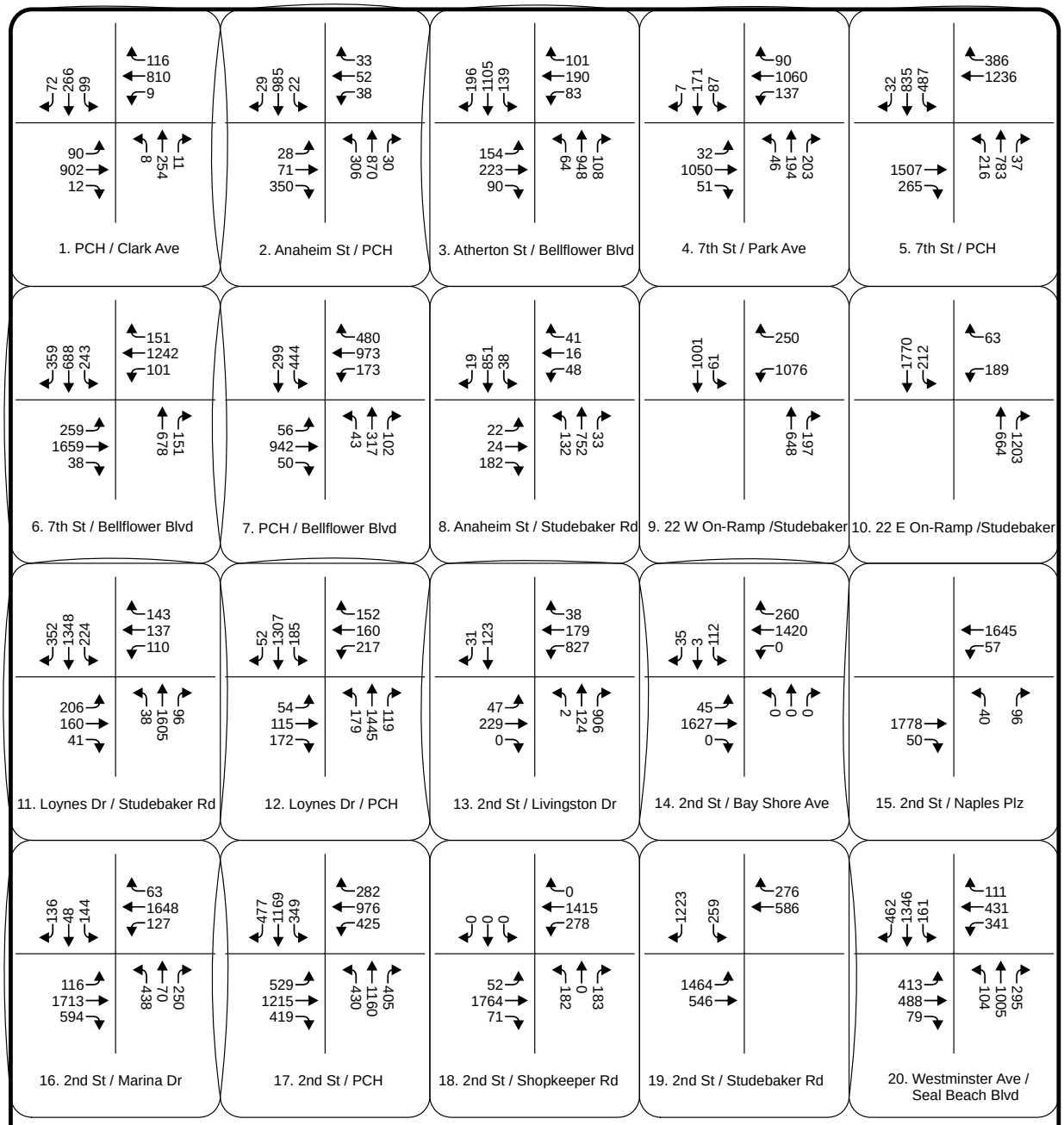
Meyer, Mohaddes Associates

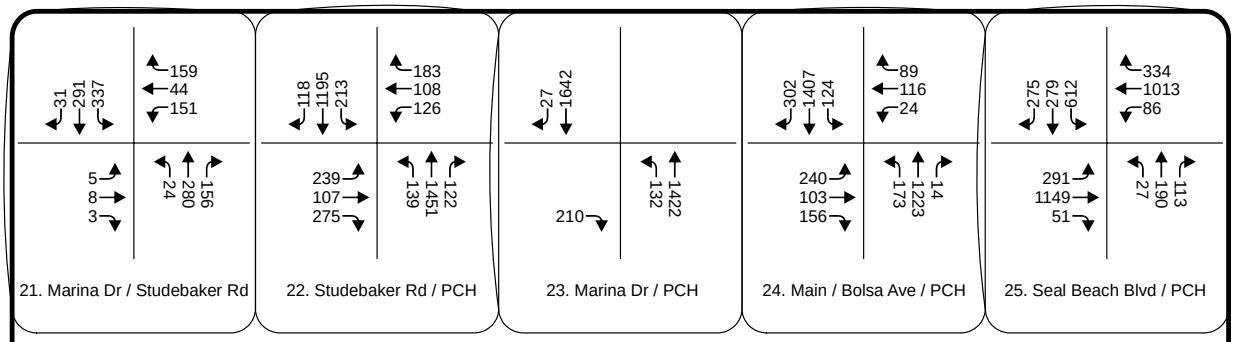
a business unit of Iteris, Inc.

Seaport Marina Project

FIGURE 7B

2009 No-Build AM and PM Peak Hour Traffic Volumes


72 266 99
116 810 9
90 902 12
8 254 11
1. PCH / Clark Ave
29 985 22
33 52 38
28 71 350
306 870 30
2. Anaheim St / PCH
196 1105 139
101 190 83
154 223 90
64 948 108
3. Atherton St / Bellflower Blvd
7 171 87
90 1060 137
32 1050 51
46 194 203
4. 7th St / Park Ave
32 835 487
386 1236
1507 265
216 783 37
5. 7th St / PCH
359 688 243
151 1242 101
259 1659 38
678 151
6. 7th St / Bellflower Blvd
299 444
480 973 173
56 942 50
43 317 102
7. PCH / Bellflower Blvd
19 851 38
41 16 48
22 24 182
132 752 33
8. Anaheim St / Studebaker Rd
1001 61
250 1076
648 197
9. 22 W On-Ramp /Studebaker
1770 212
63 189
664 1203
10. 22 E On-Ramp /Studebaker
352 1348 224
143 137 110
206 160 41
38 1605 96
11. Loynes Dr / Studebaker Rd
52 1307 185
152 160 217
54 115 172
179 1445 119
12. Loynes Dr / PCH
31 123
38 179 827
47 229 0
2 124 906
13. 2nd St / Livingston Dr
35 3 112
260 1420 0
45 1627 0
0 0 0
14. 2nd St / Bay Shore Ave
1645 57
1778 50
40 96
15. 2nd St / Naples Plz
136 48 144
63 1648 127
116 1713 594
438 70 250
16. 2nd St / Marina Dr
477 1169 349
282 976 425
529 1215 419
430 1160 405
17. 2nd St / PCH
0 0 0
0 1415 278
52 1764 71
182 0 183
18. 2nd St / Shopkeeper Rd
1223 259
276 586
1464 546
19. 2nd St / Studebaker Rd
462 1346 161
111 431 341
413 488 79
104 1005 295
20. Westminster Ave / Seal Beach Blvd
Legend
Study Intersection
XXX(XXX) AM(PM) Peak Hour Volume
N
NOT TO SCALE
Meyer, Mohaddes Associates
a business unit of Iteris, Inc.
Seaport Marina Project
FIGURE 8A
2009 No-Build Saturday Peak Hour Traffic Volumes



Legend

#	Study Intersection
XXX(XXX)	AM(PM) Peak Hour Volume

N
NOT TO SCALE

Meyer, Mohaddes Associates
a business unit of Iteris, Inc.

Seaport Marina Project

FIGURE 8B
2009 No-Build Saturday Peak Hour Traffic Volumes

Table 6
Year 2009 – No-Build Intersection Operating Conditions

Intersection		2009 No-Build								
		AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
		LOS	Ave Vehicle Delay	V/C Ratio	LOS	Ave Vehicle Delay	V/C Ratio	LOS	Ave Vehicle Delay	V/C Ratio
1	Pacific Coast Highway/Clark Av	C	-	0.763	D	-	0.818	A	-	0.559
2	Anaheim Street/Pacific Coast Hwy	A	-	0.599	C	-	0.763	D	-	0.869
3	Atherton St/Bellflower Blvd	E	-	0.976	E	-	0.923	B	-	0.678
4	7th Street/Park Avenue	F	-	1.076	F	-	1.029	C	-	0.711
5	7th St/Pacific Coast Highway	F	-	1.085	F	-	1.159	D	-	0.889
6	7th Street/Bellflower Blvd	F	-	1.038	E	-	0.967	D	-	0.819
7	Pacific Coast Hwy/Bellflower Blvd	C	-	0.766	D	-	0.871	C	-	0.753
8	Anaheim Street/Studebaker Road	D	-	0.840	C	-	0.783	A	-	0.583
9	SR 22W On-Ramp/Studebaker Rd	D	-	0.815	E	-	0.921	C	-	0.799
10	SR 22E On-ramp/Studebaker	C	-	0.743	D	-	0.803	C	-	0.762
11	Loynes Drive/Studebaker Rd	B	-	0.699	D	-	0.841	C	-	0.784
12	Loynes Dr/Pacific Coast Highway	D	-	0.895	F	-	1.033	E	-	0.997
13	2nd Street/Livingston Dr	C	-	0.718	B	-	0.666	B	-	0.648
14	2nd Street/Bay Shore Avenue	D	-	0.853	E	-	0.989	B	-	0.666
15	2nd Street/Naples Dr	B	-	0.638	D	-	0.824	B	-	0.674
16	2nd Street/E. Marina Drive	C	-	0.738	D	-	0.889	D	-	0.853
17	2nd Street/Pacific Coast Highway	E	-	0.960	F	-	1.086	F	-	1.001
18	2nd St/Shopkeeper Rd	C	-	0.701	D	-	0.848	D	-	0.820
19	2nd Street/Studebaker Rd	E	-	0.934	D	-	0.874	D	-	0.811
20	Westminster Ave/Seal Beach Blvd	C	-	0.783	D	-	0.863	B	-	0.664
21	Studebaker Rd/ E. Marina Drive (1)	B	11.6	-	B	13.7	-	C	16.5	-
22	Studebaker Rd/Pacific Coast Highway	E	-	0.927	F	-	1.193	F	-	1.043
23	Marina Dr/Pacific Coast Highway (1)	A	1.4	-	A	2.4	-	A	2.9	-
24	Pacific Coast Highway/Bolsa/Main	C	-	0.777	D	-	0.801	C	-	0.775
25	Pacific Coast Highway/Seal Beach	E	-	0.908	D	-	0.816	C	-	0.789

(1) denotes unsignalized intersection, overall intersection level of service is shown

SEAPORT MARINA PROJECT

The proposed Project consists of 170,000 square feet of retail space and 425 residential units, with parking as required by City code.

Project Traffic Generation

The first step in analyzing future traffic conditions with the Project is to estimate trip generation due to the Project. Similar to the related projects in the previous chapter, the ITE Trip Generation rates were used to estimate future Project-related trips. Table 7 summarizes the trip estimates for the Project site. The overall number of trips was reduced for internal capture and pass by trips as recommended by ITE. The number of trips were also reduced by the current number of vehicles accessing the site. The project is expected to generate 354 net trips (adjusted for internal capture, pass-by and existing site trip generation) in the AM peak hour, 726 trips in the PM peak hour, and 885 trips in the weekend peak hour.

Project Trip Distribution

The routes people will use traveling to and from the project site were determined based on SCAG regional travel demand model, with adjustments to reflect the local serving nature of the retail portion of the project. A summary of the project trip distribution assumptions is presented in Figures 9 and 10.

Project Access

The proposed project driveways are located on Pacific Coast Highway (PCH) and Marina Drive. There are two entrances proposed along Pacific Coast Highway, they are referred to as the south entrance, which is the main entrance and will provide access to both northbound and southbound Pacific Coast Highway; and the north entrance, which is located just south of the Pacific Coast Highway and 2nd Street intersection, and will limited to right turns in and right turns out only. The south (main) entrance on Pacific Coast Highway may be signalized, but does not currently have approval from Caltrans for signalization. Therefore two scenarios were analyzed, one without a traffic signal, and one with a signal at the south (main) PCH entrance. Under the scenario with the signal, the traffic exiting the Marina Shores shopping area on the east side of Pacific Coast Highway was also assumed to use the new signal. The proposed signal, which would provide easier access to PCH, would change the number of trips entering and exiting at this location by attracting more of the project traffic, and also affects the traffic at other nearby intersections. This entrance was assumed to have one inbound lane and two outbound lanes. The north entrance was assumed to have one inbound lane and one outbound lane.

An alternate access point from Pacific Coast Highway was also analyzed. This entrance, located approximately 150 feet north of the south (main) entrance discussed above, is designed as a right-in, right-out driveway. This means that only right turns may be made at the driveway, southbound vehicles on Pacific Coast Highway may turn right into the project, and project traffic exiting the site may only turn right when leaving the project. The project has been analyzed both with and without this alternate right-in, right-out driveway. The alternate right-in, right-out driveway is assumed to have one inbound lane and one outbound lane. For the initial project analysis, it is assumed that this alternate right-in, right-out driveway is in place, a separate

discussion follows that analyzes the removal of this access point, since the only intersection affected by the driveway are the two other PCH entrances that are described above.

Project Trip Assignment

The trips generated by the Project for the 2009 analysis period were assigned to the area street system using the directional distribution described above. Because there are multiple access routes from the north, south, east, and west, the access routes used for the project site were unique depending on their location.

As noted in the Project Access section above, two scenarios were analyzed, one without a signalized intersection at the main project entrance on Pacific Coast Highway, and one scenario was analyzed with a traffic signal at the main project entrance on Pacific Coast Highway. These two scenarios have different trip assignments at the intersections nearest the project. To better illustrate the changes in volumes near the project, the project-only turning movement volumes without the PCH signal are shown in Figures 11 (weekday) and 12 (Saturday); and the project added turning movement volumes with the PCH signal are shown in Figures 13 (weekday) and 14 (Saturday).

Threshold of Significance

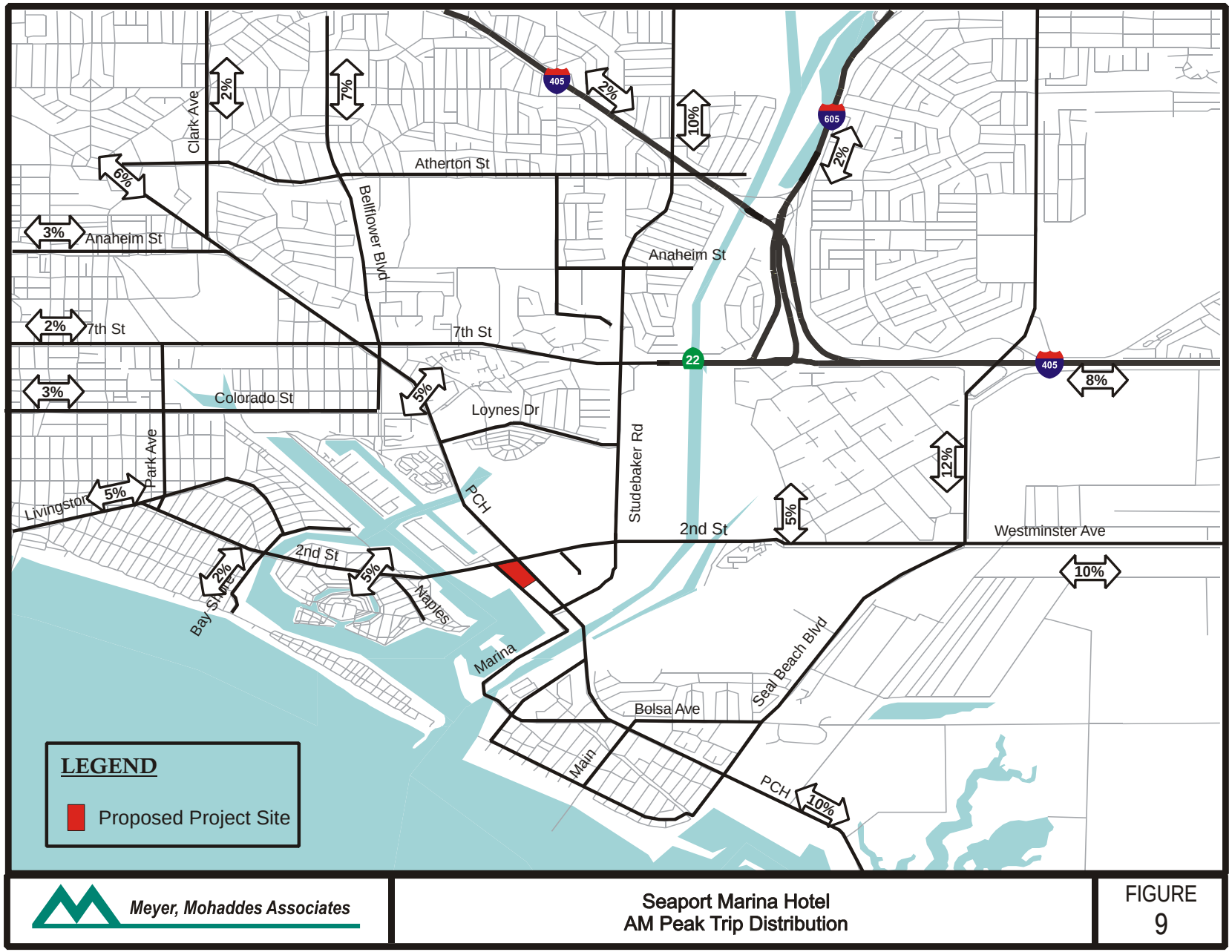
Based on the City of Long Beach traffic impact guidelines, an impact is considered significant when the resulting level-of-service is E or F and project related traffic contributes a V/C increase of 0.020 or more to the critical movements.

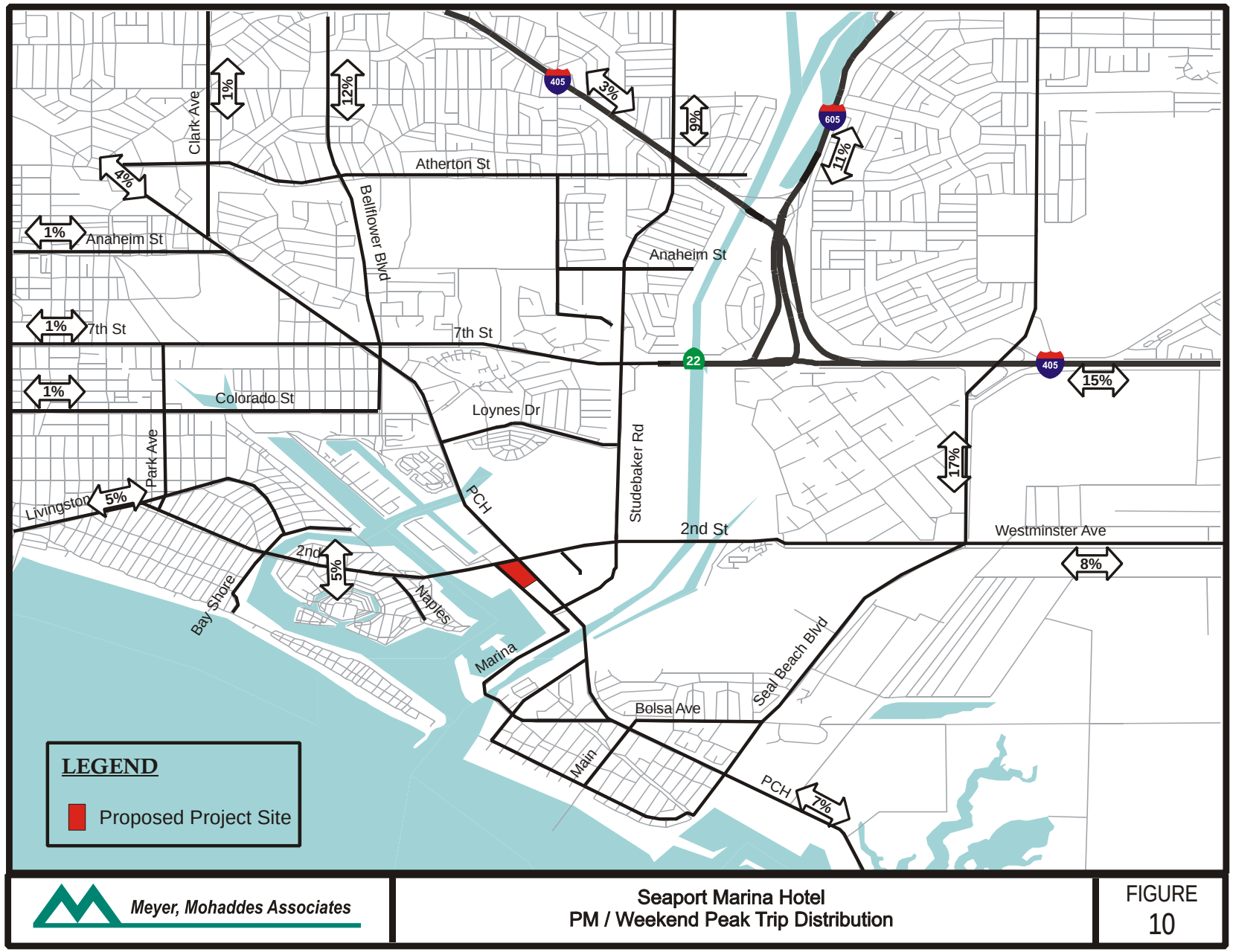
City of Seal Beach standards state that if the project increases traffic demand at a study intersection by a V/C of 0.010 or greater at a signalized location that currently, or in the future, operates al LOS E or F, there is a significant traffic impact.

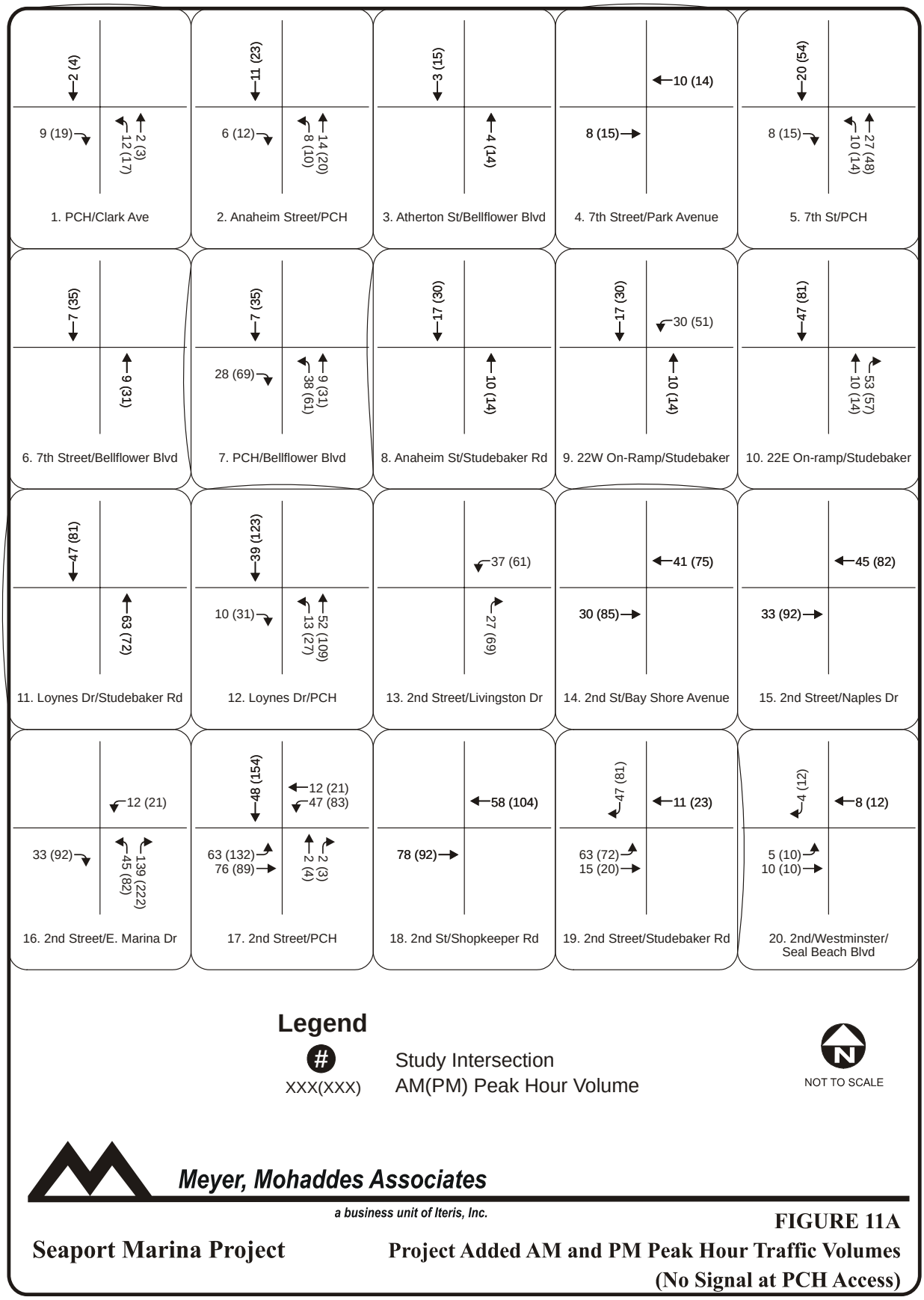
Table 7
Project Trip Generation

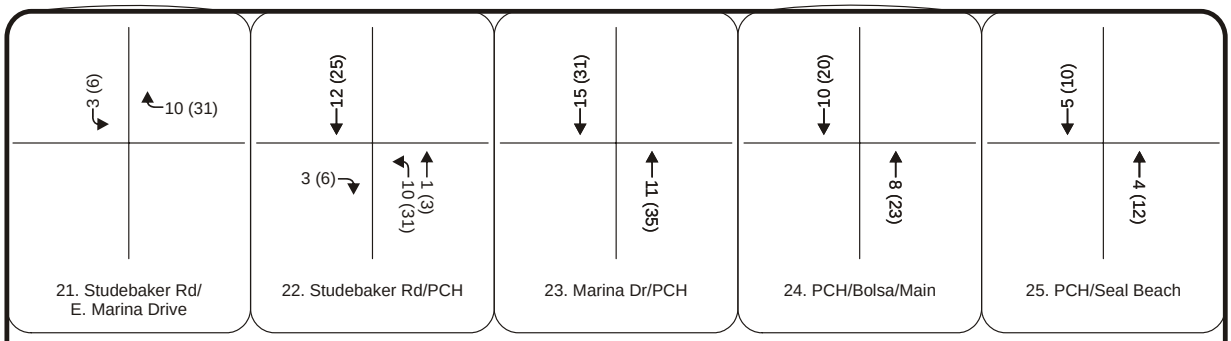
Project Name	Land Use	Building Area (ksf)/DU	ITE No.	TRIPS									WEEKEND TRIPS					
				Daily			AM Peak			PM Peak			Weekend Daily			Weekend Peak		
				In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
Seaport Marina Village	Retail	170.000	820	4,794	4,794	9,588	131	84	215	427	462	889	6,454	6,454	12,907	635	587	1,222
	Residential	425	230	1,098	1,098	2,196	28	136	164	132	65	197	983	983	1,966	90	76	166
Passby Trips*				-479	-479	-959				-142	-154	-296	-645	-645	-1,291	-219	-202	-422
Internal Capture (5%)				-240	-240	-479	-7	-4	-11	-21	-23	-44	-323	-323	-645	-32	-29	-61
				5,173	**5,173**	**10,346**	**153**	**216**	**369**	**395**	**350**	**745**	**6,469**	**6,469**	**12,938**	**474**	**431**	**905**
Existing Hotel	Hotel	164.736		95	95	190	2	13	15	10	9	19	100	100	200	8	12	20
Trips																		
Net Trips				**5,078**	**5,078**	**10,156**	**151**	**203**	**354**	**385**	**341**	**726**	**6,369**	**6,369**	**12,738**	**466**	**419**	**885**

*Pass-By Trips are trips made as intermediate stops on the way from an origin to a primary trip destination. To account for trips that come from the everyday traffic stream (i.e., existing traffic on Pacific Coast Highway or 2nd Street), the following peak hour pass-by reduction factors were utilized (Source: Trip Generation Handbook, Institute of Transportation Engineers, October 1998):
Retail: 33% PM Peak Hour Weekday, 35% Peak Hour Weekend
Daily pass-by percentages estimated to be 10% for the Retail land use.
Existing daily hotel trips are not available, only peak hour trips were counted. It was assumed that the PM Peak and Saturday Peak were 10% of the daily trips.


Clark Ave
Atherton St
Bellflower Blvd
Anaheim St
7th St
Colorado St
Loynes Dr
Park Ave
Livingston
PCH
Studebaker Rd
2nd St
Westminster Ave
Bay Shore
Naples
Marina
Seal Beach Blvd
Bolsa Ave
Main
405
605
22
2%
7%
10%
6%
3%
5%
12%
8%
LEGEND
Proposed Project Site
Meyer, Mohaddes Associates
Seaport Marina Hotel
AM Peak Trip Distribution
FIGURE
9


Clark Ave
1%
12%
405
3%
9%
605
11%
Atherton St
4%
Bellflower Blvd
1%
Anaheim St
Anaheim St
1%
7th St
7th St
22
405
15%
1%
Colorado St
Loynes Dr
Studebaker Rd
17%
Park Ave
Livingston
5%
PCH
2nd St
Westminster Ave
2nd
5%
8%
Bay Shore
Naples
Marina
Seal Beach Blvd
Bolsa Ave
Main
PCH
7%
LEGEND
Proposed Project Site
Meyer, Mohaddes Associates
Seaport Marina Hotel
PM / Weekend Peak Trip Distribution
FIGURE
10


2 (4)
9 (19)
2 (3)
12 (17)
1. PCH/Clark Ave
11 (23)
6 (12)
8 (10)
14 (20)
2. Anaheim Street/PCH
3 (15)
4 (14)
3. Atherton St/Bellflower Blvd
10 (14)
8 (15)
4. 7th Street/Park Avenue
20 (54)
8 (15)
10 (14)
27 (48)
5. 7th St/PCH
7 (35)
9 (31)
6. 7th Street/Bellflower Blvd
7 (35)
28 (69)
9 (31)
38 (61)
7. PCH/Bellflower Blvd
17 (30)
10 (14)
8. Anaheim St/Studebaker Rd
17 (30)
30 (51)
10 (14)
9. 22W On-Ramp/Studebaker
47 (81)
10 (14)
53 (57)
10. 22E On-ramp/Studebaker
47 (81)
63 (72)
11. Loynes Dr/Studebaker Rd
39 (123)
10 (31)
13 (27)
52 (109)
12. Loynes Dr/PCH
37 (61)
27 (69)
13. 2nd Street/Livingston Dr
41 (75)
30 (85)
14. 2nd St/Bay Shore Avenue
45 (82)
33 (92)
15. 2nd Street/Naples Dr
12 (21)
33 (92)
45 (82)
139 (222)
16. 2nd Street/E. Marina Dr
48 (154)
12 (21)
47 (83)
63 (132)
76 (89)
2 (4)
2 (3)
17. 2nd Street/PCH
58 (104)
78 (92)
18. 2nd St/Shopkeeper Rd
47 (81)
11 (23)
63 (72)
15 (20)
19. 2nd Street/Studebaker Rd
4 (12)
8 (12)
5 (10)
10 (10)
20. 2nd/Westminster/
Seal Beach Blvd
Legend
#
XXX(XXX)
Study Intersection
AM(PM) Peak Hour Volume
N
NOT TO SCALE
Meyer, Mohaddes Associates
a business unit of Iteris, Inc.
FIGURE 11A
Seaport Marina Project
Project Added AM and PM Peak Hour Traffic Volumes
(No Signal at PCH Access)



Legend

\# Study Intersection

XXX(XXX) AM(PM) Peak Hour Volume

N

NOT TO SCALE

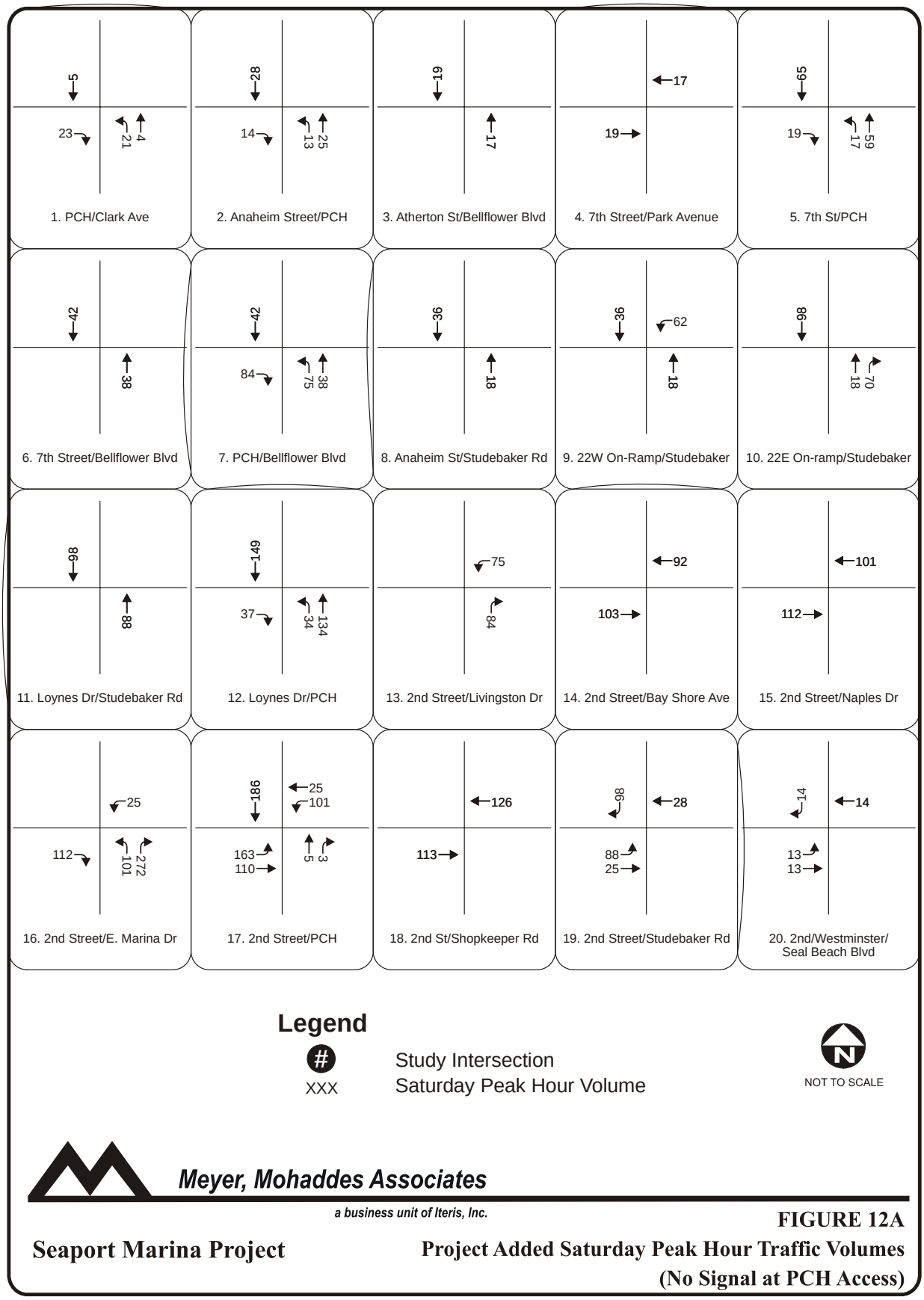
Meyer, Mohaddes Associates

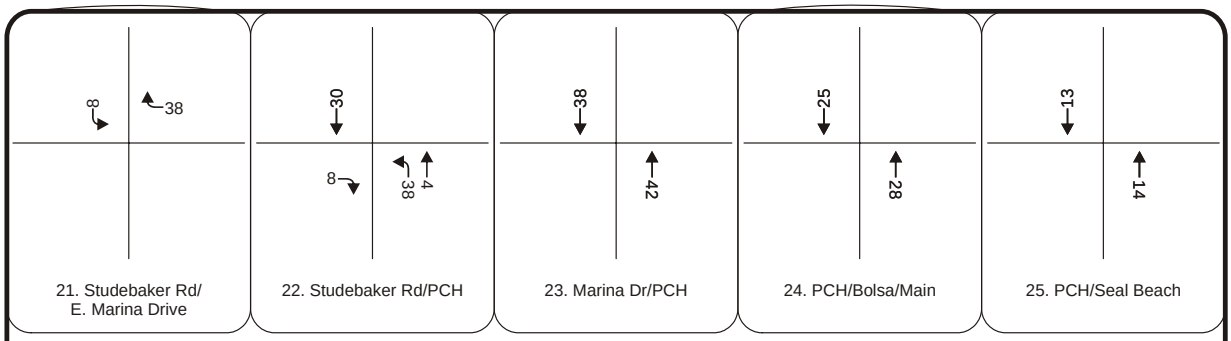
a business unit of Iteris, Inc.

FIGURE 11B

Seaport Marina Project

Project Added AM and PM Peak Hour Traffic Volumes (No Signal at PCH Access)


5
23
4
21
1. PCH/Clark Ave
28
14
25
13
2. Anaheim Street/PCH
19
17
3. Atherton St/Bellflower Blvd
17
19
4. 7th Street/Park Avenue
95
19
17
59
5. 7th St/PCH
42
38
6. 7th Street/Bellflower Blvd
42
84
75
38
7. PCH/Bellflower Blvd
36
18
8. Anaheim St/Studebaker Rd
36
62
18
9. 22W On-Ramp/Studebaker
98
18
70
10. 22E On-ramp/Studebaker
98
88
11. Loynes Dr/Studebaker Rd
149
37
34
134
12. Loynes Dr/PCH
75
84
13. 2nd Street/Livingston Dr
92
103
14. 2nd Street/Bay Shore Ave
101
112
15. 2nd Street/Naples Dr
25
112
101
272
16. 2nd Street/E. Marina Dr
186
25
101
163
110
5
3
17. 2nd Street/PCH
126
113
18. 2nd St/Shopkeeper Rd
86
28
88
25
19. 2nd Street/Studebaker Rd
14
14
13
13
20. 2nd/Westminster/
Seal Beach Blvd
Legend
#
Study Intersection
XXX
Saturday Peak Hour Volume
N
NOT TO SCALE
Meyer, Mohaddes Associates
a business unit of Iteris, Inc.
Seaport Marina Project
FIGURE 12A
Project Added Saturday Peak Hour Traffic Volumes
(No Signal at PCH Access)



Legend

Study Intersection

XXX Saturday Peak Hour Volume

NOT TO SCALE

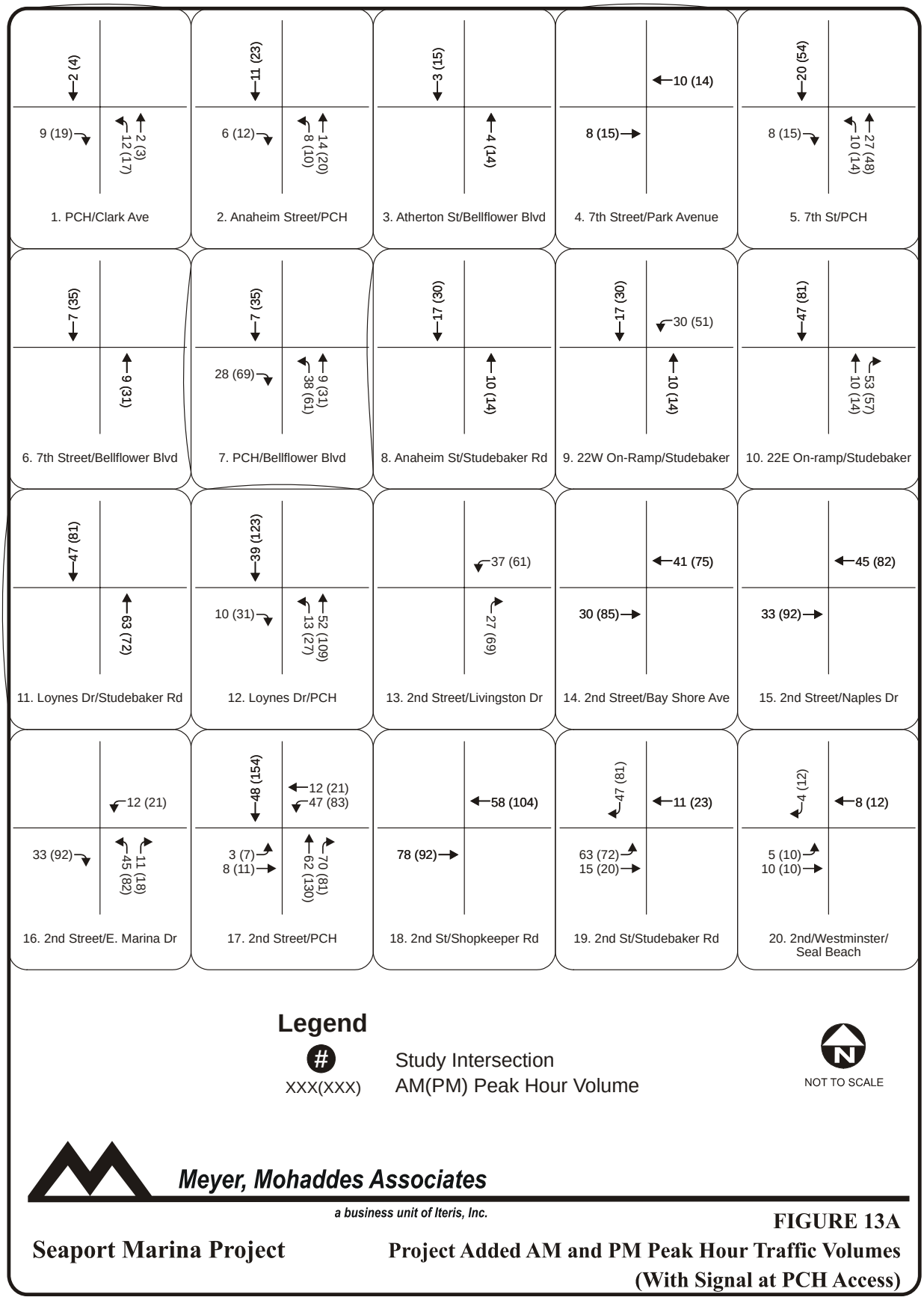
Meyer, Mohaddes Associates

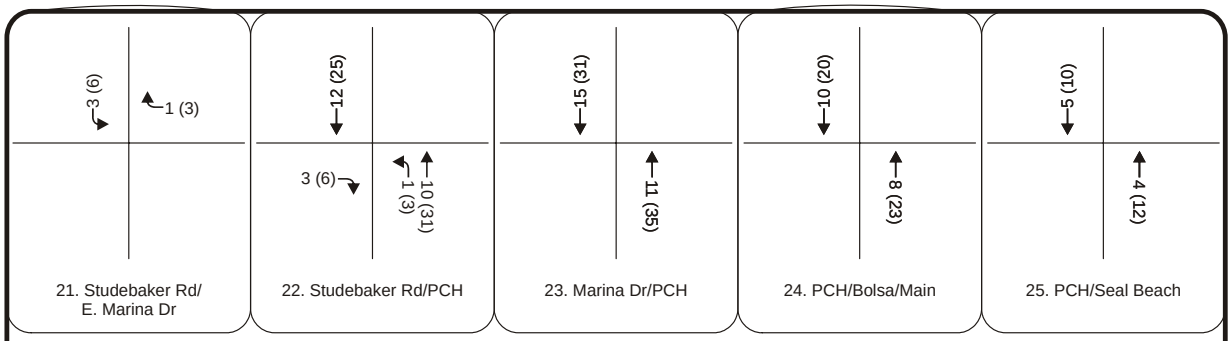
a business unit of Iteris, Inc.

FIGURE 12B

Seaport Marina Project

Project Added Saturday Peak Hour Traffic Volumes (No Signal at PCH Access)


2 (4)
9 (19)
2 (3)
12 (17)
1. PCH/Clark Ave
11 (23)
6 (12)
14 (20)
8 (10)
2. Anaheim Street/PCH
3 (15)
4 (14)
3. Atherton St/Bellflower Blvd
10 (14)
8 (15)
4. 7th Street/Park Avenue
20 (54)
8 (15)
27 (48)
10 (14)
5. 7th St/PCH
7 (35)
9 (31)
6. 7th Street/Bellflower Blvd
7 (35)
28 (69)
9 (31)
38 (61)
7. PCH/Bellflower Blvd
17 (30)
10 (14)
8. Anaheim St/Studebaker Rd
17 (30)
30 (51)
10 (14)
9. 22W On-Ramp/Studebaker
47 (81)
53 (57)
10 (14)
10. 22E On-ramp/Studebaker
47 (81)
63 (72)
11. Loynes Dr/Studebaker Rd
39 (123)
10 (31)
52 (109)
13 (27)
12. Loynes Dr/PCH
37 (61)
27 (69)
13. 2nd Street/Livingston Dr
41 (75)
30 (85)
14. 2nd Street/Bay Shore Ave
45 (82)
33 (92)
15. 2nd Street/Naples Dr
12 (21)
33 (92)
45 (82)
11 (18)
16. 2nd Street/E. Marina Dr
48 (154)
12 (21)
47 (83)
3 (7)
8 (11)
62 (130)
70 (81)
17. 2nd Street/PCH
58 (104)
78 (92)
18. 2nd St/Shopkeeper Rd
47 (81)
11 (23)
63 (72)
15 (20)
19. 2nd St/Studebaker Rd
4 (12)
8 (12)
5 (10)
10 (10)
20. 2nd/Westminster/
Seal Beach
Legend
#
XXX(XXX)
Study Intersection
AM(PM) Peak Hour Volume
N
NOT TO SCALE
Meyer, Mohaddes Associates
a business unit of Iteris, Inc.
Seaport Marina Project
FIGURE 13A
Project Added AM and PM Peak Hour Traffic Volumes
(With Signal at PCH Access)



Legend

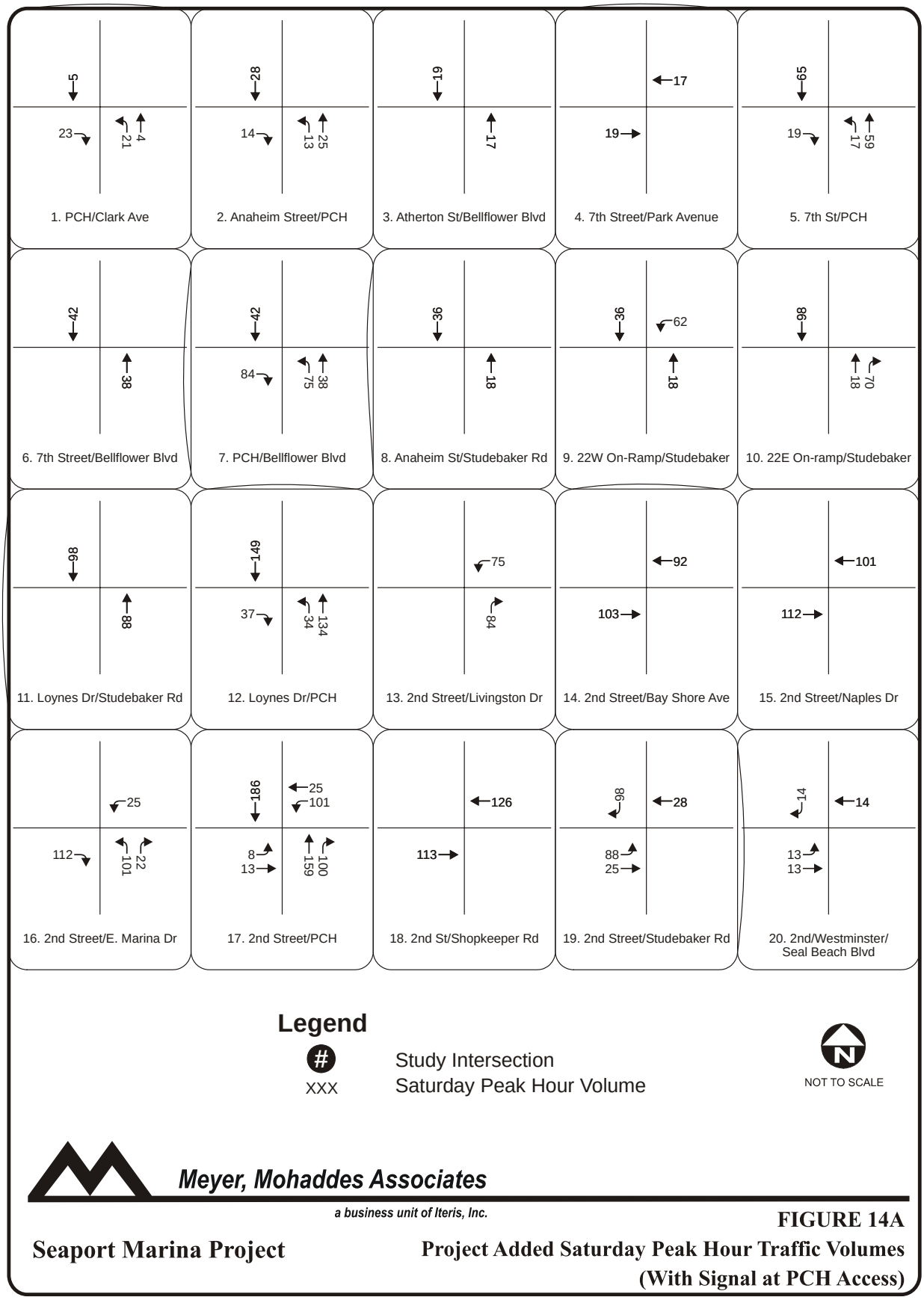
#	Study Intersection
XXX(XXX)	AM(PM) Peak Hour Volume

N
NOT TO SCALE

Meyer, Mohaddes Associates
a business unit of Iteris, Inc.

Seaport Marina Project

FIGURE 13B
Project Added AM and PM Peak Hour Traffic Volumes (With Signal at PCH Access)


5
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4
21
1. PCH/Clark Ave
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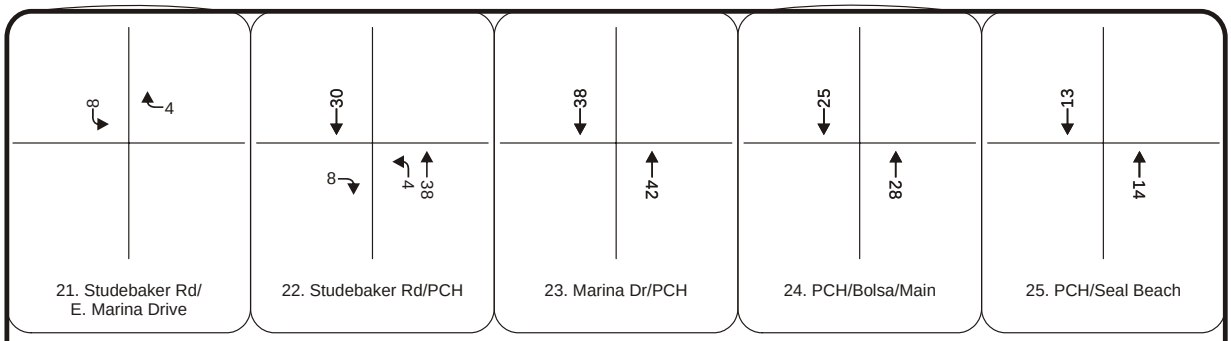
14
25
13
2. Anaheim Street/PCH
19
17
3. Atherton St/Bellflower Blvd
17
19
4. 7th Street/Park Avenue
95
19
17
59
5. 7th St/PCH
42
38
6. 7th Street/Bellflower Blvd
42
84
38
75
7. PCH/Bellflower Blvd
36
18
8. Anaheim St/Studebaker Rd
36
62
18
9. 22W On-Ramp/Studebaker
98
18
70
10. 22E On-ramp/Studebaker
98
88
11. Loynes Dr/Studebaker Rd
149
37
134
34
12. Loynes Dr/PCH
75
84
13. 2nd Street/Livingston Dr
92
103
14. 2nd Street/Bay Shore Ave
101
112
15. 2nd Street/Naples Dr
25
112
101
22
16. 2nd Street/E. Marina Dr
186
8
13
25
101
159
100
17. 2nd Street/PCH
126
113
18. 2nd St/Shopkeeper Rd
86
28
88
25
19. 2nd Street/Studebaker Rd
14
14
13
13
20. 2nd/Westminster/
Seal Beach Blvd
Legend
#
Study Intersection
XXX
Saturday Peak Hour Volume
N
NOT TO SCALE
Meyer, Mohaddes Associates
a business unit of Iteris, Inc.
Seaport Marina Project
FIGURE 14A
Project Added Saturday Peak Hour Traffic Volumes
(With Signal at PCH Access)



Legend

#	Study Intersection
XXX	Saturday Peak Hour Volume

NOT TO SCALE

Meyer, Mohaddes Associates

a business unit of Iteris, Inc.

FIGURE 14B

Seaport Marina Project

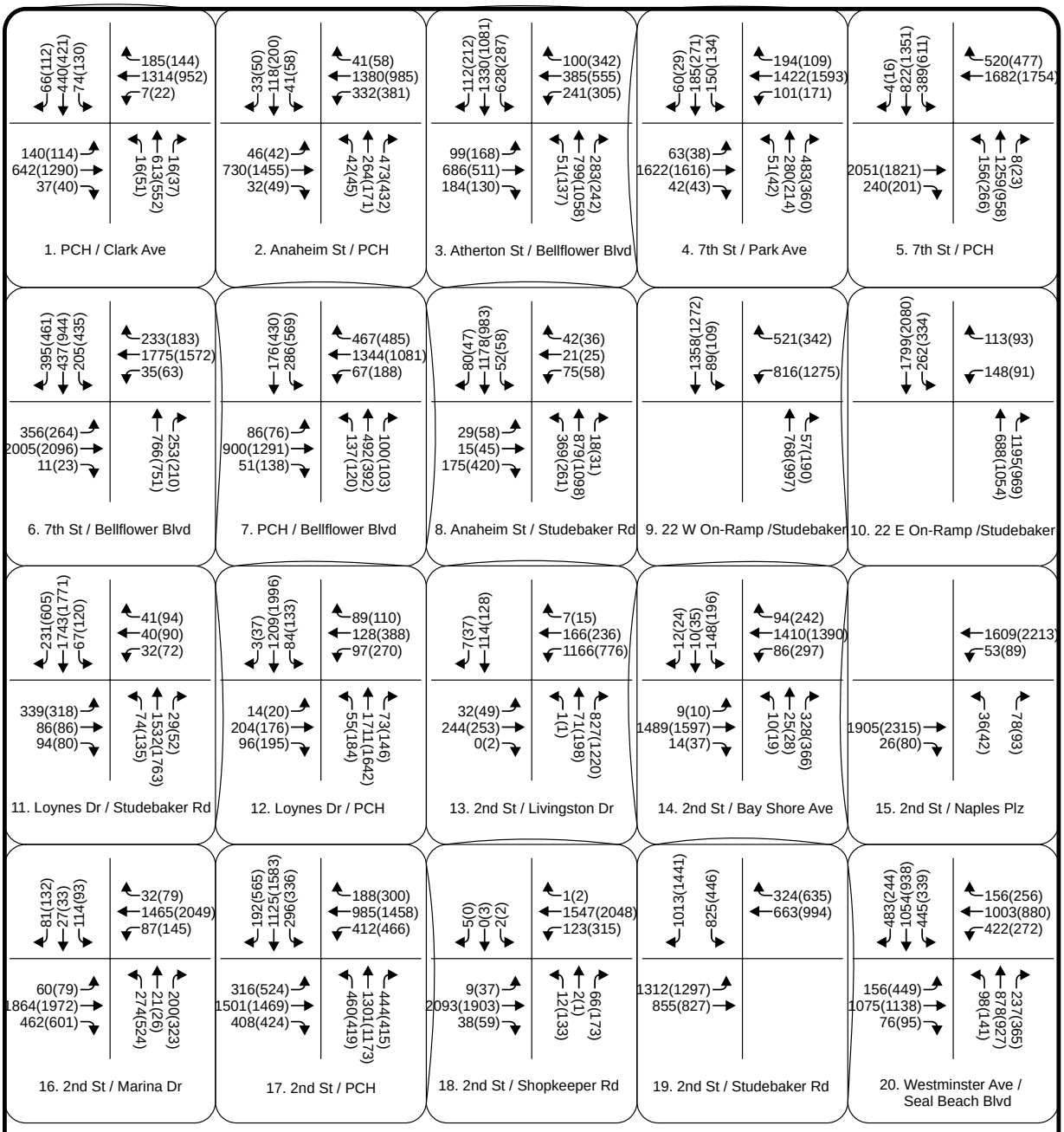
Project Added Saturday Peak Hour Traffic Volumes (With Signal at PCH Access)

Year 2009 With-Project Traffic Operations (No Signal at South PCH Access)

The total intersection volumes for the Year 2009 are illustrated in Figures 15 and 16. These volumes do not consider a traffic signal to be in place at the south (main) project access on Pacific Coast Highway. For the 2009 With-Project conditions, seven study intersections are projected to have significant impacts. The project impacts at the seven intersections are:

- 7th St & Pacific Coast Highway (PM peak period)
- SR 22W On-Ramp & Studebaker Rd (PM peak period)
- Loynes Dr & Pacific Coast Highway (PM and Saturday peak periods)
- 2nd Street & Marina Drive (PM and Saturday peak periods)
- 2nd Street & Pacific Coast Highway (AM, PM, and Saturday peak periods)
- 2nd Street & Studebaker Rd (AM and PM peak periods)
- Studebaker Rd & Pacific Coast Highway (PM and Saturday peak periods)

Table 8 summarizes the level of service results.



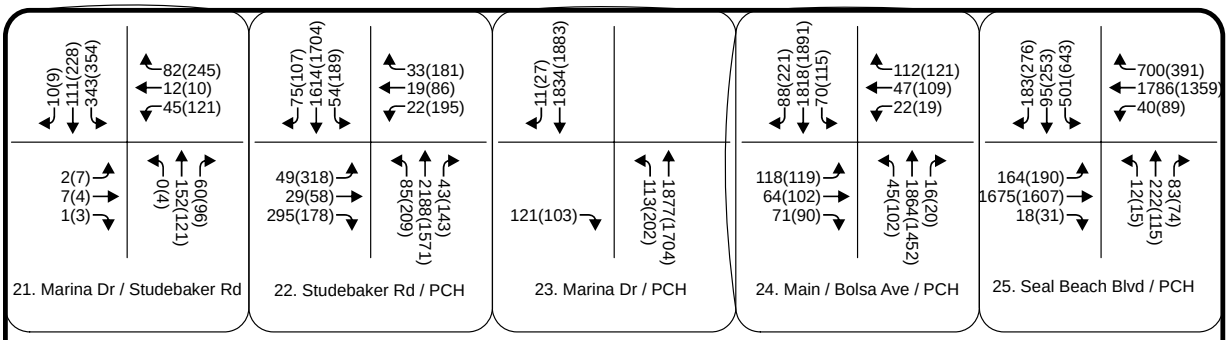
Meyer, Mohaddes Associates

a business unit of Iteris, Inc.

FIGURE 15A

Seaport Marina Project

2009 With-Project AM and PM Peak Hour Traffic Volumes (No Signal at PCH Access)



Legend

#	Study Intersection
XXX(XXX)	AM(PM) Peak Hour Volume

NOT TO SCALE

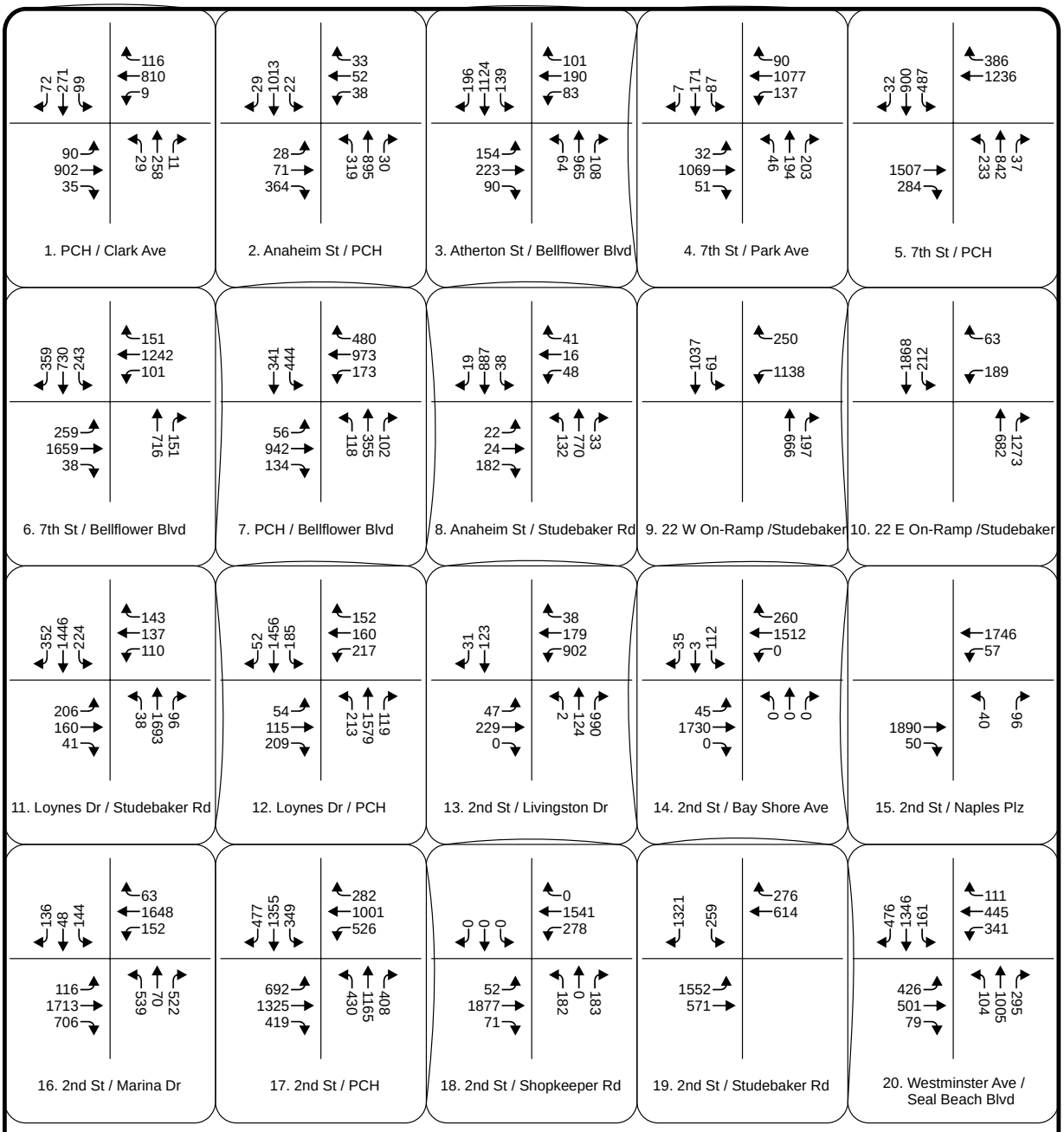
Meyer, Mohaddes Associates

a business unit of Iteris, Inc.

FIGURE 15B

Seaport Marina Project

2009 With-Project AM and PM Peak Hour Traffic Volumes (No Signal at PCH Access)



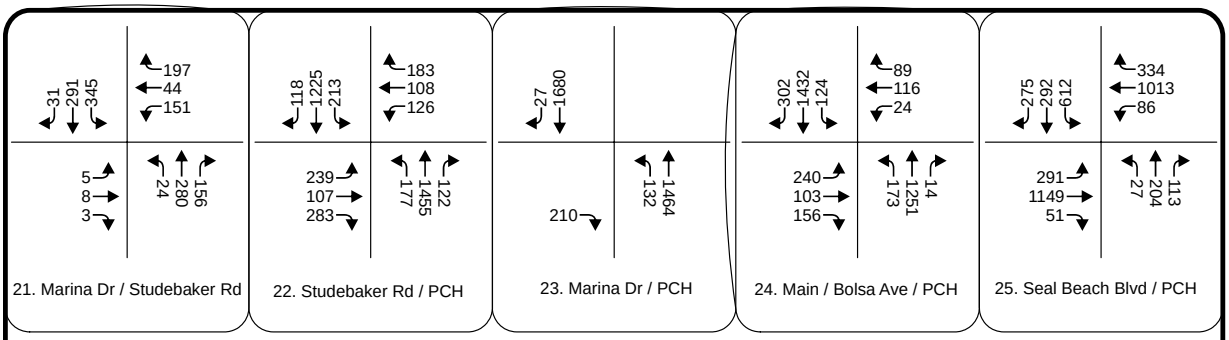
Meyer, Mohaddes Associates

a business unit of Iteris, Inc.

FIGURE 16A

Seaport Marina Project

2009 With-Project Saturday Peak Hour Traffic Volumes (No Signal at PCH Access)



Legend

#	Study Intersection
XXX(XXX)	AM(PM) Peak Hour Volume

NOT TO SCALE

Meyer, Mohaddes Associates

a business unit of Iteris, Inc.

FIGURE 16B

Seaport Marina Project

2009 With-Project Saturday Peak Hour Traffic Volumes (No Signal at PCH Access)

Table 8
Peak Hour LOS Comparison - (South PCH Driveway not Signalized)

Study Intersection	Year 2009 AM					Year 2009 PM					Year 2009 Saturday				
	No Project		With Project		Diff	No Project		With Project		Diff	No Project		With Project		Diff
	LOS	V/C or Delay	LOS	V/C or Delay		LOS	V/C or Delay	LOS	V/C or Delay		LOS	V/C or Delay	LOS	V/C or Delay	
Pacific Coast Highway/Clark Av	C	0.763	C	0.768	0.005	D	0.818	D	0.831	0.013	A	0.559	A	0.574	0.015
Anaheim Street/Pacific Coast Hwy	A	0.599	B	0.607	0.008	C	0.763	C	0.775	0.012	D	0.869	D	0.894	0.025
Atherton St/Bellflower Blvd	E	0.976	E	0.976	0.000	E	0.923	E	0.926	0.003	B	0.678	B	0.682	0.004
7th Street/Park Avenue	F	1.076	F	1.078	0.002	F	1.029	F	1.034	0.005	C	0.711	C	0.717	0.006
7th St/Pacific Coast Highway	F	1.085	F	1.091	0.006	F	1.159	F	1.179	**0.020**	D	0.889	E	0.906	0.017
7th Street/Bellflower Blvd	F	1.038	F	1.038	0.000	E	0.967	E	0.973	0.006	D	0.819	D	0.830	0.011
Pacific Coast Hwy/Bellflower Blvd	C	0.766	C	0.769	0.003	D	0.871	D	0.895	0.024	C	0.753	C	0.765	0.012
Anaheim Street/Studebaker Road	D	0.840	D	0.845	0.005	C	0.783	C	0.792	0.009	A	0.583	A	0.594	0.011
SR 22W On-Ramp/Studebaker Rd	D	0.815	D	0.830	0.015	E	0.921	E	0.946	**0.025**	C	0.799	D	0.830	0.031
SR 22E On-Ramp/Studebaker	C	0.743	C	0.758	0.015	D	0.803	D	0.828	0.025	C	0.762	C	0.793	0.031
Loynes Drive/Studebaker Rd	B	0.699	C	0.709	0.010	D	0.841	D	0.857	0.016	C	0.784	D	0.802	0.018
Loynes Dr/Pacific Coast Highway	D	0.895	E	0.914	0.019	F	1.033	F	1.083	**0.050**	E	0.997	F	1.062	**0.065**
2nd Street/Livingston Dr	C	0.718	C	0.729	0.011	B	0.666	B	0.685	0.019	B	0.648	B	0.671	0.023
2nd Street/Bay Shore Avenue	D	0.853	D	0.866	0.013	E	0.989	F	1.007	0.018	B	0.666	B	0.695	0.029
2nd Street/Naples Dr	B	0.638	B	0.652	0.014	D	0.824	D	0.850	0.026	B	0.674	C	0.705	0.031
2nd Street/E. Marina Drive	C	0.738	C	0.759	0.021	D	0.889	E	0.927	**0.038**	D	0.853	E	0.970	**0.117**

Study Intersection	Year 2009 AM					Year 2009 PM					Year 2009 Saturday				
	No Project		With Project		Diff	No Project		With Project		Diff	No Project		With Project		Diff
	LOS	V/C or Delay	LOS	V/C or Delay		LOS	V/C or Delay	LOS	V/C or Delay		LOS	V/C or Delay	LOS	V/C or Delay	
2nd Street/Pacific Coast Highway	E	0.960	E	1.000	**0.040**	F	1.086	F	1.131	**0.045**	F	1.001	F	1.053	**0.052**
2nd St/Shopkeeper Rd	C	0.701	C	0.718	0.017	D	0.848	D	0.868	0.020	D	0.820	D	0.844	0.024
2nd Street/Studebaker Rd	E	0.934	E	0.956	**0.022**	D	0.874	E	0.902	**0.028**	D	0.811	D	0.844	0.033
Westminster Ave/Seal Beach Blvd	C	0.783	C	0.787	0.004	D	0.863	D	0.869	0.006	B	0.664	B	0.680	0.016
Studebaker Rd/ E. Marina Drive (1)	B	11.6	B	11.7	0.1	B	13.7	B	14.2	0.5	C	16.5	C	17.3	0.8
Studebaker Rd/Pacific Coast Highway	E	0.927	E	0.938	0.011	F	1.193	F	1.220	**0.027**	F	1.043	F	1.081	**0.038**
Marina Dr/Pacific Coast Highway (1)	A	1.4	A	1.4	0.0	A	2.4	A	2.5	0.1	A	2.9	A	3.0	0.1
Pacific Coast Highway/Bolsa/Main	C	0.777	C	0.779	0.002	D	0.801	D	0.807	0.006	C	0.775	C	0.782	0.007
Pacific Coast Highway/Seal Beach Bl	E	0.908	E	0.909	0.001	D	0.816	D	0.820	0.004	C	0.789	C	0.793	0.004

Bold "diff" column indicates significantly impacted location

(1) denotes unsignalized intersection, overall intersection level of service is shown

Year 2009 Cumulative Project Analysis (No Signal at South PCH Access)

An analysis of the cumulative impacts has been conducted for the project. This consists of an analysis that compares existing conditions to the future with project conditions including all other sources of traffic growth. The future with project conditions are the same as analyzed in the previous section, and include all ambient traffic growth, along with cumulative and project traffic. The significance criteria are the same as the prior analysis, however the increment is larger since it covers all future traffic growth, not only the project increment.

All existing and year 2009 with project traffic volumes are the same as illustrated earlier in this report.

This analysis, like the earlier project impact analysis, does not consider a traffic signal to be in place at the south (main) project access on Pacific Coast Highway. For the 2009 Cumulative Analysis conditions, twelve (12) study intersections are projected to have significant impacts:

- Atherton St & Bellflower Blvd (AM and PM peak periods)
- 7th Street & Park Avenue (AM and PM peak periods)
- 7th Street & Pacific Coast Highway (AM, PM, and Saturday peak periods)
- 7th Street & Bellflower Boulevard (AM and PM peak periods)
- SR 22W On-Ramp & Studebaker Rd (PM peak period)
- Loynes Dr & Pacific Coast Highway (AM, PM and Saturday peak periods)
- 2nd Street & Bay Shore Avenue (PM peak period)
- 2nd Street & Marina Drive (PM and Saturday peak periods)
- 2nd Street & Pacific Coast Highway (AM, PM, and Saturday peak periods)
- 2nd Street & Studebaker Rd (AM and PM peak periods)
- Studebaker Rd & Pacific Coast Highway (AM, PM and Saturday peak periods)
- Pacific Coast Highway & Seal Beach Boulevard (AM peak period)

Table 9 summarizes the level of service results for the cumulative project analysis.

Table 9
Year 2009 Cumulative Analysis - (South PCH Driveway not Signalized)

Study Intersection	AM					PM					Saturday				
	Existing		2009 Cumulative Plus Project		Diff	Existing		2009 Cumulative Plus Project		Diff	Existing		2009 Cumulative Plus Project		Diff
	LOS	V/C or Delay	LOS	V/C or Delay		LOS	V/C or Delay	LOS	V/C or Delay		LOS	V/C or Delay	LOS	V/C or Delay	
Pacific Coast Highway/Clark Av	C	0.735	C	0.768	0.033	C	0.785	D	0.831	0.046	A	0.529	A	0.574	0.045
Anaheim Street/Pacific Coast Hwy	A	0.577	B	0.607	0.030	C	0.732	C	0.775	0.043	D	0.825	D	0.894	0.069
Atherton St/Bellflower Blvd	E	0.945	E	0.976	**0.031**	D	0.890	E	0.926	**0.036**	B	0.648	B	0.682	0.034
7th Street/Park Avenue	F	1.035	F	1.078	**0.043**	E	0.987	F	1.034	**0.047**	B	0.667	C	0.717	0.050
7th St/Pacific Coast Highway	F	1.047	F	1.091	**0.044**	F	1.108	F	1.179	**0.071**	D	0.848	E	0.906	**0.058**
7th Street/Bellflower Blvd	F	1.004	F	1.038	**0.034**	E	0.937	E	0.973	**0.036**	D	0.800	D	0.830	0.030
Pacific Coast Hwy/Bellflower Blvd	C	0.739	C	0.769	0.030	D	0.821	D	0.895	0.074	C	0.711	C	0.765	0.054
Anaheim Street/Studebaker Road	C	0.768	D	0.845	0.077	C	0.706	C	0.792	0.086	A	0.498	A	0.594	0.096
SR 22W On-Ramp/Studebaker Rd	C	0.739	D	0.830	0.091	D	0.856	E	0.946	**0.090**	B	0.683	D	0.830	0.147
SR 22E On-Ramp/Studebaker	B	0.662	C	0.758	0.096	C	0.741	D	0.828	0.087	B	0.634	C	0.793	0.159
Loynes Drive/Studebaker Rd	C	0.718	C	0.709	-0.009	C	0.762	D	0.857	0.095	A	0.598	D	0.802	0.204
Loynes Dr/Pacific Coast Highway	D	0.837	E	0.914	**0.077**	E	0.926	F	1.083	**0.157**	D	0.850	F	1.062	**0.212**
2nd Street/Livingston Dr	B	0.690	C	0.729	0.039	B	0.626	B	0.685	0.059	A	0.593	B	0.671	0.078
2nd Street/Bay Shore Avenue	D	0.818	D	0.866	0.048	E	0.941	F	1.007	**0.066**	B	0.608	B	0.695	0.087
2nd Street/Naples Dr	B	0.611	B	0.652	0.041	C	0.776	D	0.850	0.074	B	0.616	C	0.705	0.089

Study Intersection	AM					PM					Saturday				
	Existing		2009 Cumulative Plus Project		Diff	Existing		2009 Cumulative Plus Project		Diff	Existing		2009 Cumulative Plus Project		Diff
	LOS	V/C or Delay	LOS	V/C or Delay		LOS	V/C or Delay	LOS	V/C or Delay		LOS	V/C or Delay	LOS	V/C or Delay	
2nd Street/E. Marina Drive	C	0.710	C	0.759	0.049	D	0.849	E	0.927	**0.078**	C	0.781	E	0.970	**0.189**
2nd Street/Pacific Coast Highway	E	0.967	E	1.000	**0.033**	F	1.028	F	1.131	**0.103**	E	0.928	F	1.053	**0.125**
2nd St/Shopkeeper Rd	B	0.658	C	0.718	0.060	D	0.807	D	0.868	0.061	C	0.763	D	0.844	0.081
2nd Street/Studebaker Rd	E	0.930	E	0.956	**0.026**	D	0.889	E	0.902	0.013	C	0.756	D	0.844	0.088
Westminster Ave/Seal Beach Blvd	B	0.686	C	0.787	0.101	B	0.681	D	0.869	0.188	A	0.446	B	0.680	0.234
Studebaker Rd/ E. Marina Drive (1)	B	10.9	B	11.7	0.8	B	12.0	B	14.2	2.2	B	13.6	C	17.3	3.7
Studebaker Rd/Pacific Coast Highway	D	0.844	E	0.938	**0.094**	E	0.972	F	1.220	**0.248**	C	0.780	F	1.081	**0.301**
Marina Dr/Pacific Coast Highway (1)	A	1.3	A	1.4	0.1	A	2.1	A	2.5	0.4	A	2.5	A	3.0	0.5
Pacific Coast Highway/Bolsa/Main	C	0.718	C	0.779	0.061	C	0.755	D	0.807	0.052	B	0.683	C	0.782	0.099
Pacific Coast Highway/Seal Beach Bl	D	0.869	E	0.909	**0.040**	C	0.761	D	0.820	0.059	C	0.742	C	0.793	0.051

Bold "diff" column indicates significantly impacted location

(1) denotes unsignalized intersection, overall intersection level of service is shown

Year 2009 With-Project Traffic Operations (Including Signal at South PCH Access)

An additional analysis was made of the conditions with the assumption that a traffic signal will be located at the south (main) project access along Pacific Coast Highway. In the analysis without a signal, most of the traffic exiting the site that wishes to access the area north and east of the Pacific Coast Highway/2nd Street intersection would not use the PCH access to exit due to high through volumes on PCH that would impede an eastbound left turn maneuver. Rather, they would tend to exit the site via the 2nd Street/Marina Drive intersection, and then access the areas north and east of the project site. The number of eastbound throughs and left turns in the no-signal analysis is higher than the with signal analysis at the intersection of Pacific Coast Highway/2nd Street. Alternatively, with a signal assumed at the south (main) driveway, the project traffic through the 2nd Street and Marina Drive intersection will decrease and the orientation of project traffic at 2nd Street & Pacific Coast Highway will change. The turning movement volumes will be different at four study intersections; all remaining intersections will not change. The study intersections that have volume changes due to the addition of a signal at the south (main) project access on PCH are:

- 2nd Street & E. Marina Drive (decreased volume)
- 2nd Street & Pacific Coast Highway (changes in turning movement volumes)
- Studebaker Rd & E. Marina Drive (changes in turning movement volumes)
- Studebaker Rd & Pacific Coast Highway (changes in turning movement volumes)

The level of service results for these four intersections with the Pacific Coast Highway south driveway traffic signal are shown in Table 10 below. The total intersection volumes for the Year 2009 are illustrated in Figures 17 and 18. The analysis shows that the same seven study intersections would have significant impacts; however if the signal is in place, there will not be an impact at the 2nd Street and PCH intersection in the PM peak, nor at Studebaker Road and Pacific Coast Highway in the PM peak. The seven impacted intersections are:

- 7th St & Pacific Coast Highway (PM and Saturday peak periods)
- SR 22W On-Ramp & Studebaker Rd (PM peak period)
- Loynes Dr & Pacific Coast Highway (PM peak period)
- 2nd Street & Marina Drive (PM and Saturday peak periods)
- 2nd Street & Pacific Coast Highway (AM and Saturday peak periods)
- 2nd Street & Studebaker Rd (AM and PM peak periods)
- Studebaker Rd & Pacific Coast Highway (Saturday peak period)

Table 10
Peak Hour LOS Comparison - (Assumes South PCH Driveway with Traffic Signal)

Study Intersection	Year 2009 AM					Year 2009 PM					Year 2009 Saturday				
	No Project		With Project		Diff	No Project		With Project		Diff	No Project		With Project		Diff
	LOS	V/C or Delay	LOS	V/C or Delay		LOS	V/C or Delay	LOS	V/C or Delay		LOS	V/C or Delay	LOS	V/C or Delay	
2nd Street/E. Marina Drive	C	0.738	C	0.759	0.021	D	0.889	E	0.927	**0.038**	D	0.853	E	0.970	**0.117**
2nd Street/Pacific Coast Highway	E	0.960	F	1.020	**0.060**	F	1.086	F	1.099	0.013	F	1.001	F	1.034	**0.033**
Studebaker Rd/ E. Marina Drive	B	11.6	B	11.6	0.0	B	13.7	B	13.9	0.2	C	16.5	C	16.8	0.3
Studebaker Rd/Pacific Coast Highway	E	0.901	E	0.907	0.006	F	1.017	F	1.027	0.010	D	0.897	E	0.914	**0.017**

Bold "diff" column indicates significantly impacted location
(1) denotes unsignalized intersection, overall intersection level of service is shown

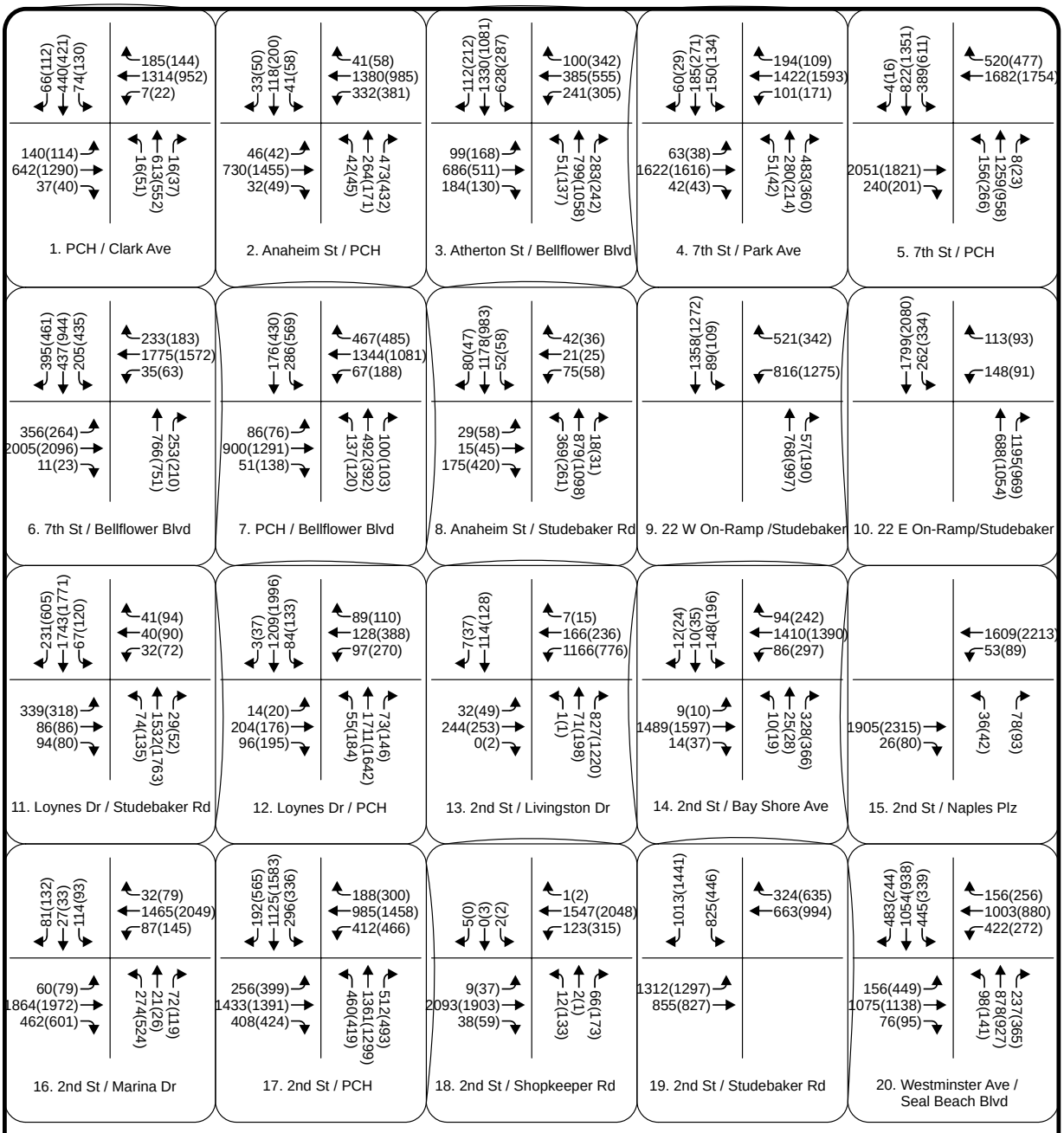


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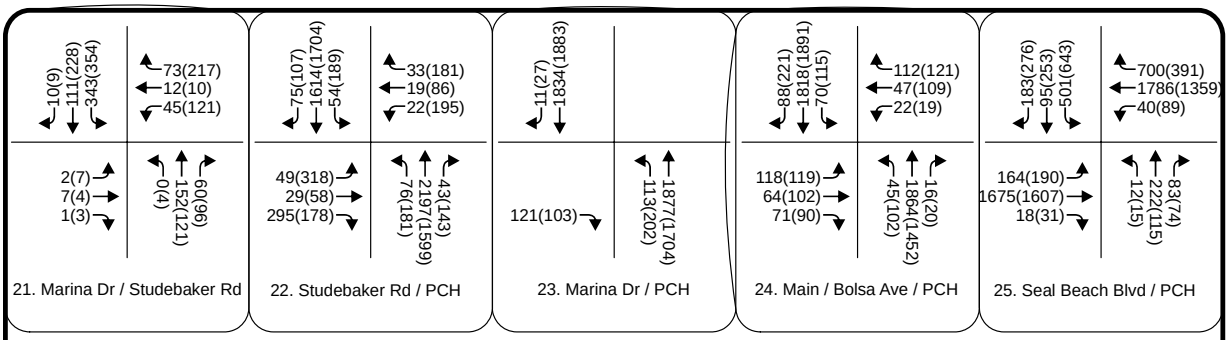
FIGURE 17A

Seaport Marina Project **2009 With-Project AM and PM Peak Hour Traffic Volumes (With Signal at PCH Access)**



Legend

#	Study Intersection
XXX(XXX)	AM(PM) Peak Hour Volume

NOT TO SCALE

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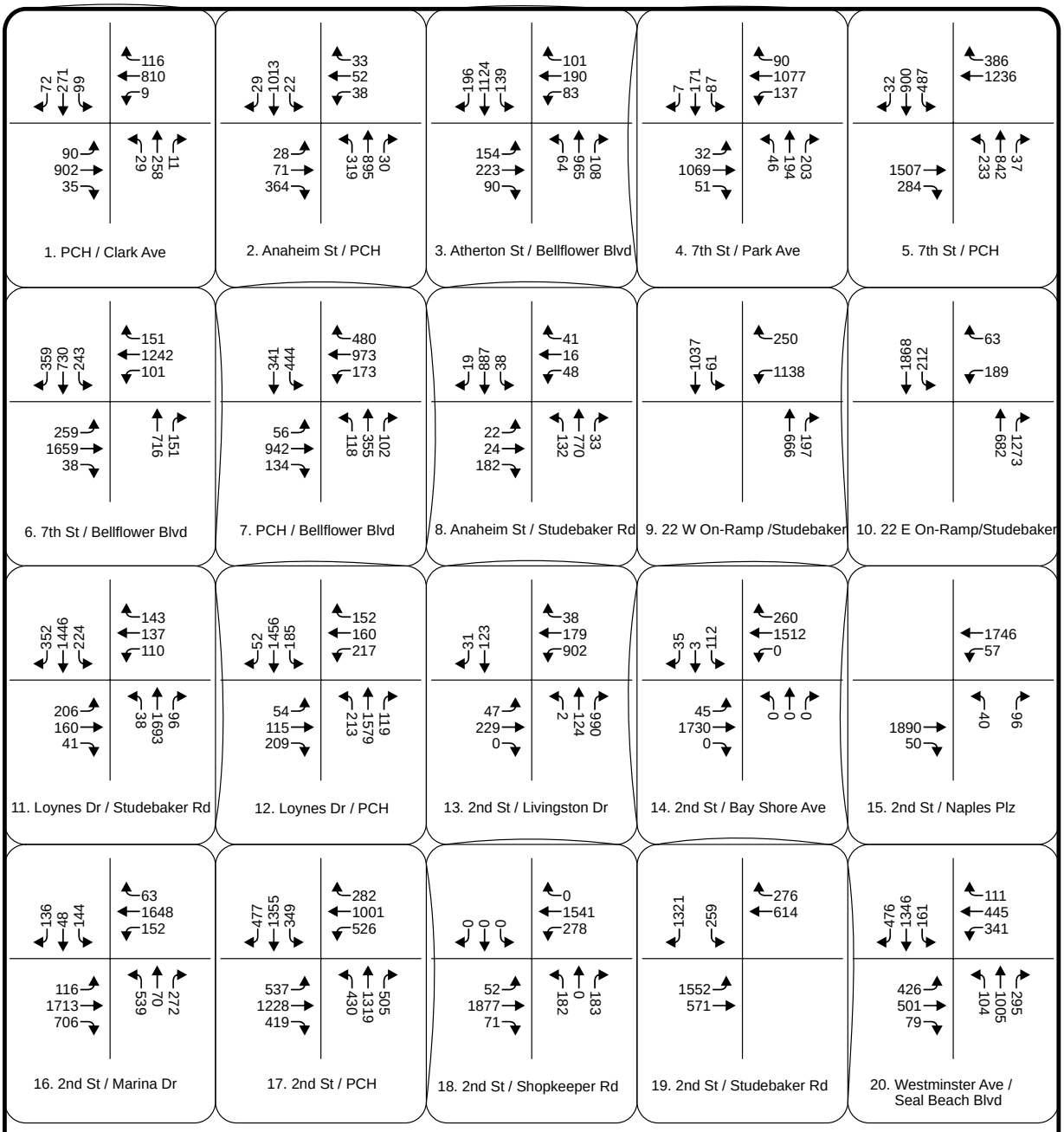
FIGURE 17B

Seaport Marina Project

2009 With-Project AM and PM Peak Hour Traffic Volumes (With Signal at PCH Access)



Legend

#	Study Intersection
XXX(XXX)	AM(PM) Peak Hour Volume

NOT TO SCALE

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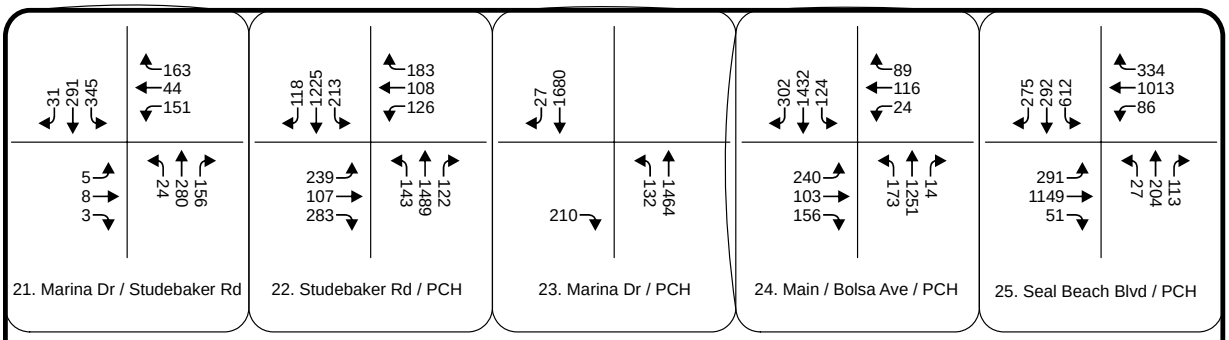
FIGURE 18A

Seaport Marina Project

2009 With-Project Saturday Peak Hour Traffic Volumes (With Signal at PCH Access)



Legend

#	Study Intersection
XXX(XXX)	AM(PM) Peak Hour Volume

NOT TO SCALE

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FIGURE 18B

Seaport Marina Project

2009 With-Project Saturday Peak Hour Traffic Volumes (With Signal at PCH Access)

Project Access Analysis along Pacific Coast Highway

As noted earlier, two access driveways to the project site are proposed from Pacific Coast Highway. The south (main) entrance on Pacific Coast Highway may be signalized, but does not currently have approval from Caltrans for signalization. Therefore, as can be seen in the earlier text two scenarios were analyzed, one without a signal, and one with a signal at the south (main) PCH entrance. When the signal was analyzed, the traffic exiting the Marina Shores shopping area from the exits adjacent to Claim Jumper and El Torito restaurants were assumed to also use the new signal. The proposed signal, which would provide easier access to PCH would change the number of trips entering and exiting at this location, and also affects the traffic at four other nearby intersections.

The project also considers an alternate right-in, right-out access on Pacific Coast Highway, located approximately 150 feet north of the south (main) access described above. The previous analyses considered this alternate right-in, right-out access to be in place. Separate analyses were conducted in order to determine the changes if this access point was removed. The traffic volumes that would use this alternate access would shift to the two other driveway accesses on Pacific Coast Highway. Since the secondary driveway is right-in, right-out only, the current right turns into the driveway would enter at the other main access driveways. The vehicles that would exit the project via the secondary driveway must turn right, if this access were removed, these vehicles would exit the other access driveways along Pacific Coast Highway.

Thus, four access scenarios for the Pacific Coast Highway access points were evaluated. They are:

- South (main) project access is unsignalized; alternate right-in, right-out access is in place;
- South (main) project access is signalized; alternate right-in, right-out access is in place;
- South (main) project access is unsignalized; alternate right-in, right-out access does not exist;
- South (main) project access is signalized; alternate right-in, right-out access does not exist.

The lane configurations and volumes for the four access scenarios are shown in Figures 19 through 22 below. The lane configurations for the south (main) project access were derived from site plans, which denotes 36 feet of width, therefore it was analyzed with two departure lanes and one receiving lane. The alternate right-in, right-out access drive was assumed to have one departure lane and one receiving lane, similar to the north access driveway.

Level of service calculations are presented in Table 11 for the four access scenarios.

Table 11
Project Access along Pacific Coast Highway Peak Hour LOS Comparison

Access Scenario			Year 2009 AM		Year 2009 PM		Year 2009 Saturday	
South (Main) Project Driveway on PCH	**Alternate Right-in, Right-out Driveway**		**LOS**	**V/C or Delay**	**LOS**	**V/C or Delay**	**LOS**	**V/C or Delay**
Unsignalized	**In Place**							
		South Dwy	F	230.3	F	OVRFL	F	OVRFL
		North Dwy	B	13.8	B	13.7	C	15.7
		Alternate	B	13.6	B	13.4	C	13.2
Signalized	**In Place**							
		South Dwy	C	0.703	E	0.909	E	0.932
		North Dwy	B	13.8	B	13.7	C	13.7
		Alternate	B	13.6	B	13.4	C	15.2
Unsignalized	**None**							
		South Dwy	F	230.3	F	OVRFL	F	OVRFL
		North Dwy	B	14.0	B	14.2	C	16.4
		Alternate	N/A	N/A	N/A	N/A	N/A	N/A
Signalized	**None**							
		South Dwy	C	0.703	E	0.909	E	0.932
		North Dwy	B	14.0	B	14.2	C	16.4
		Alternate	N/A	N/A	N/A	N/A	N/A	N/A

As shown, the best overall operating conditions would be provided under the scenario with the south (main) driveway signalized, with or without the alternate right-in, right-out driveway. Without a traffic signal, the LOS would be F, resulting in delays to turning vehicles and also resulting in further diversion to 2nd Street as well as Studebaker Road.

At the south (main) access project driveway along Pacific Coast Highway in signalized conditions, the level of service calculations show that with two exiting lanes (as shown on the current plans), the intersection will operate at LOS E in the PM and Saturday peak hours. If three exiting lanes were provided, the intersection would operate a LOS D or better.

The level of service calculations also show that having the alternate right-in, right-out access driveway has little effect on the level of service at other project driveways. The shift in volumes does not change the critical movements within the intersection.

A Caltrans signal warrant analysis was conducted for the south (main) access project driveway intersection for the peak hour volume warrants, and it appears that warrants would be satisfied. This analysis assumed that only the north and south-out driveways are in place. The Caltrans signal warrant worksheets are provided in the Appendix.

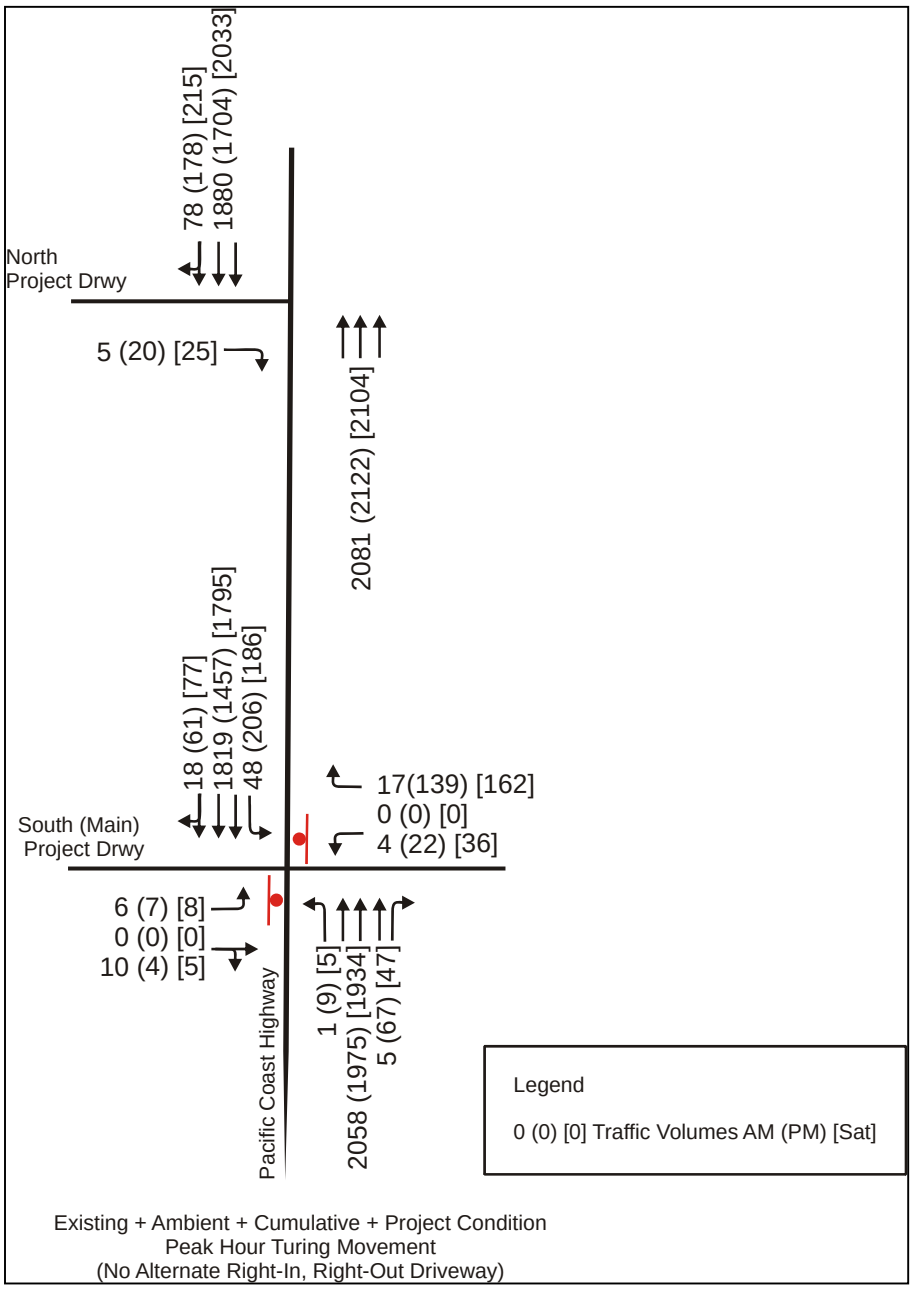


Figure 19
Project Driveway Volumes at PCH (No Signal)
(No Alternate Right-In, Right-Out Driveway)

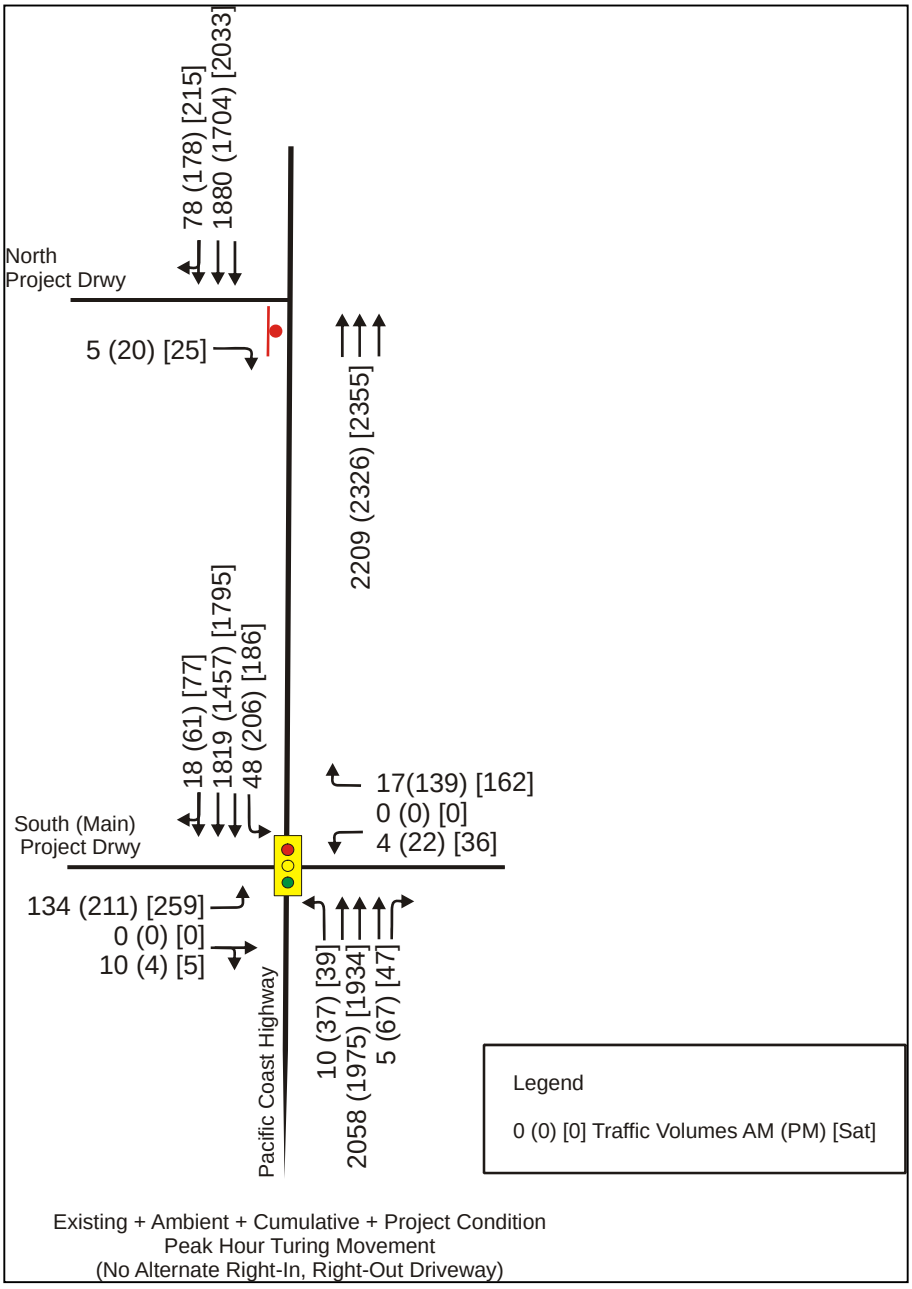


Figure 20
Project Driveway Volumes at PCH (With Signal)
(No Alternate Right-In, Right-Out Driveway)

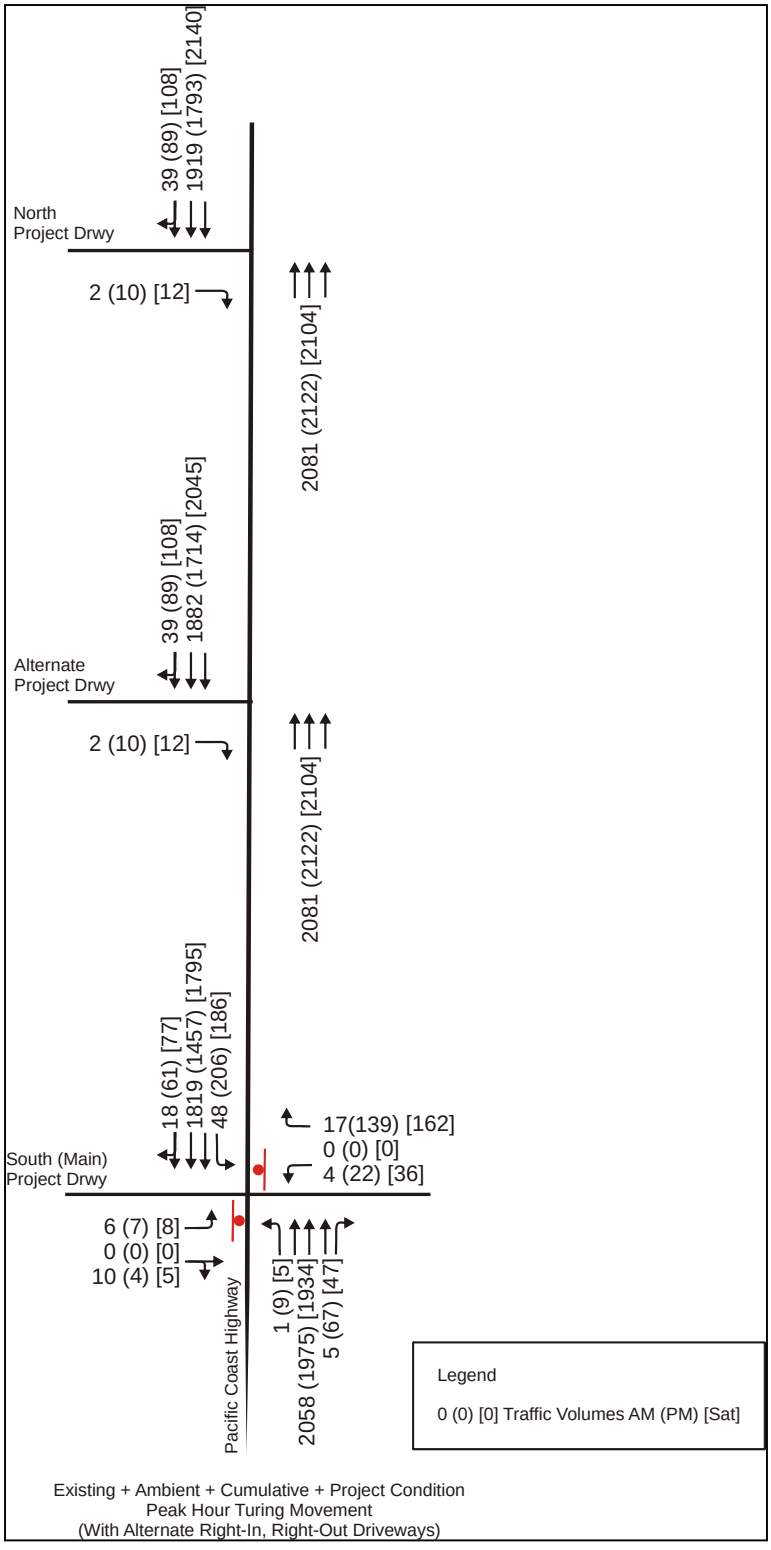


Figure 21
Project Driveway Volumes at PCH (No Signal)
(With Alternate Right-In, Right-Out Driveway)

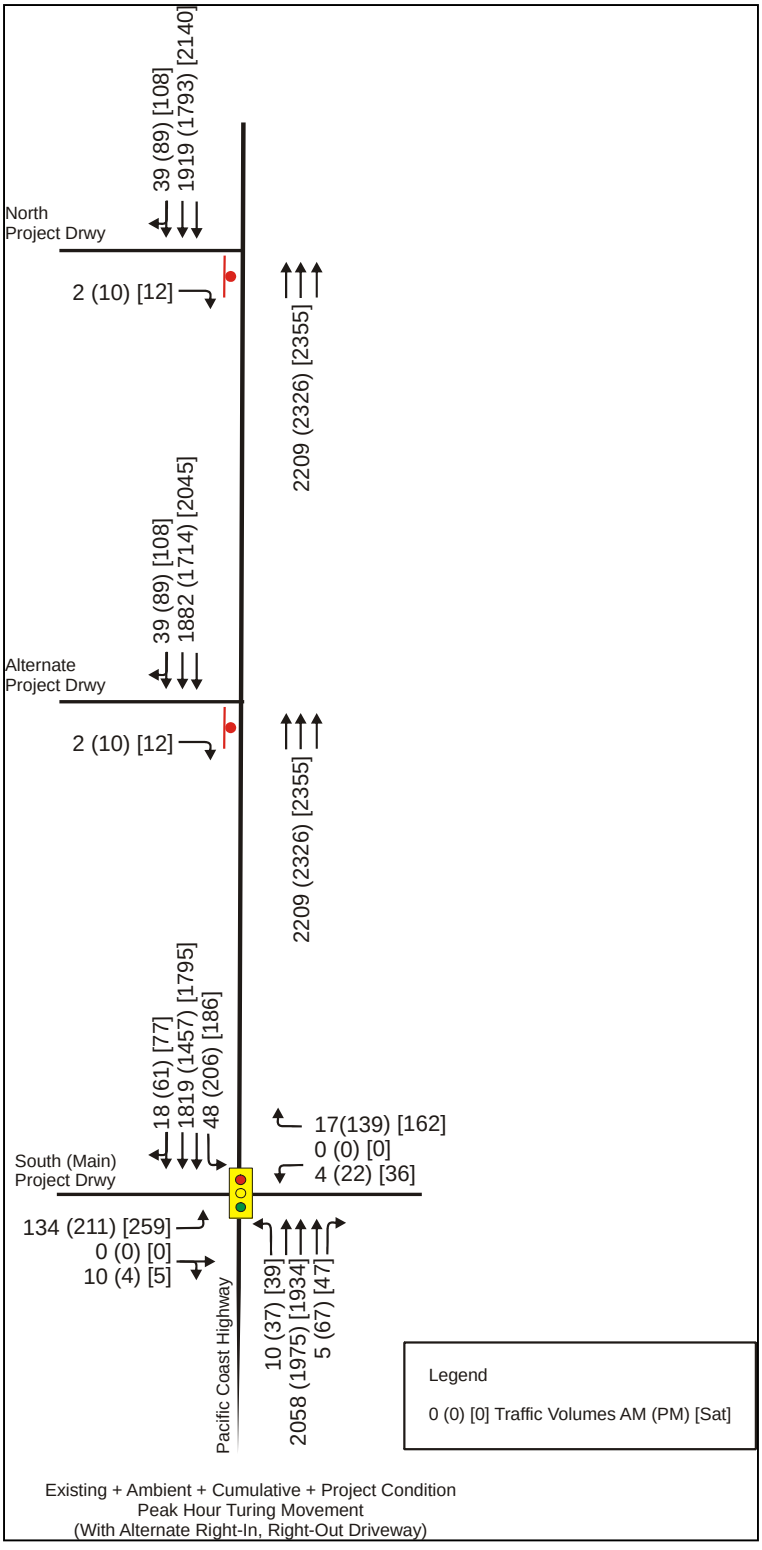


Figure 22
Project Driveway Volumes at PCH (With Signal)
(With Secondary Right-In, Right-Out Driveway)

MITIGATION ANALYSIS FOR PROJECT IMPACTS AND CUMULATIVE IMPACTS

Improvements to the area transportation system have been identified through various means. These include:

- Previously Committed Improvements (as part of the Boeing Seal Beach project)
- Seaport Marina Project Mitigation Measures

These measures, once implemented, will improve the traffic flow and safety in this portion of the City. This section of the report describes the transportation system improvements, including project mitigation and other improvements, and assesses the ability of these improvements to reduce project and cumulative impacts in the study area.

Previously Committed Improvements

As part of the Boeing Seal Beach project, a change to the existing street system within the study area has been committed as part of that project approval. This improvement will add a westbound right-turn lane at the 2nd Street / Studebaker Road intersection. This improvement will allow westbound vehicles who wish to go north on Studebaker Road a separate turn lane and remove these vehicles from the through lanes, thus increasing capacity in the intersection. This change has been included in the with- and without-project scenarios. Although this mitigation is proposed as part of the Boeing Seal Beach project and assumed in this study, because the City cannot guarantee this project and its mitigations will move forward, for purposes of this report a significant cumulative impact would occur if this improvement is not made.

Year 2009 Seaport Marina Project Mitigation Measures

The Project will contribute to significant project impacts at several of the study area intersections. Some of these intersections are physically constrained with existing developments located close to the street or other limitations making expansion of the roadway cross-section impractical. At these locations, operational improvements may improve overall traffic conditions, but will not affect the volume-to-capacity calculation on which the impact criteria are based. At these locations, a significant unavoidable impact may remain. A summary of the operating conditions with the proposed mitigation measures is listed in Table 12.

To mitigate and address the Project's significant impacts, the following measures are proposed:

1.) 2nd Street and Marina Drive

The project shall restripe the northbound approach to provide two left, one through and one right turn lane; restripe the southbound approach to provide one left, one through and one right turn lane; and upgrade the traffic signal to provide protected left turns and overlap phases; as directed by the City Traffic Engineer. These changes, combined with the new traffic signal at the Pacific Coast Highway main driveway, will fully mitigate this project's impacts at this location (see Table 12).

2.) Loynes Drive and Pacific Coast Highway

The project shall construct a shared northbound right turn-through lane, along with the installation of new curb and gutter. The turn lane length would be approximately 150 feet. This improvement will fully mitigate this project's impacts at this location (see Table 12).

3.) Four-Lane Connection Roadway – 2nd Street to Pacific Coast Highway

A new four-lane roadway connecting Studebaker Road to Shopkeeper Road around the Marketplace shopping center shall be constructed as project mitigation. This roadway will provide a "bypass" route for some traffic to avoid the congested 2nd Street / Pacific Coast Highway intersection. It will divert some northbound right turns and westbound left turns away from the 2nd Street/Pacific Coast Highway intersection. The proposed new roadway includes the following improvements:

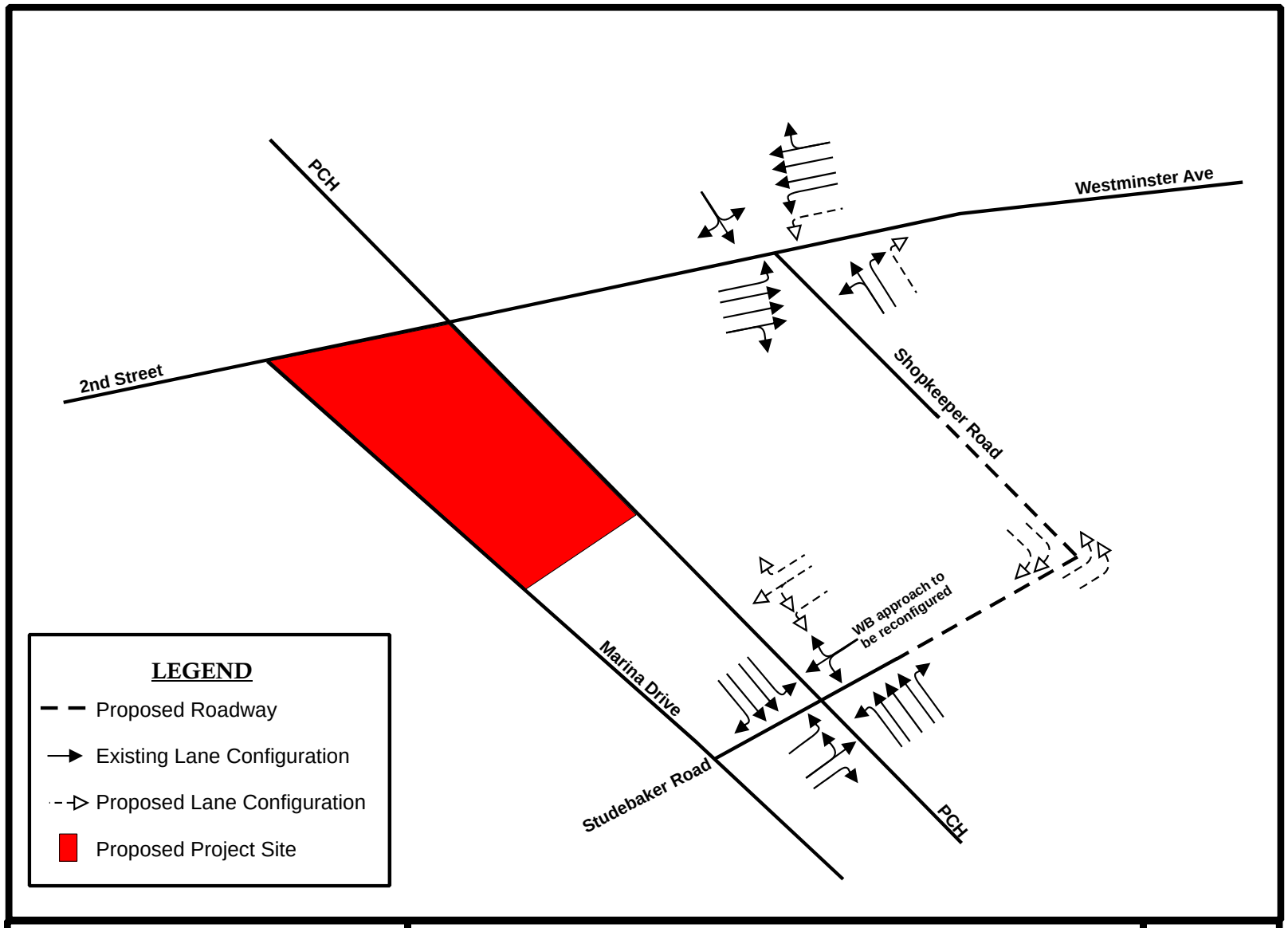
- It will be a new four-lane public roadway connection between the intersection of Studebaker Road & Pacific Coast Highway and 2nd Street & Shopkeeper Road behind the Market Place Shopping Center. The project applicant will be responsible for acquiring the necessary right-of-way. The project applicant will be responsible for the design and construction of the new roadway facility. The project applicant will secure necessary approvals from other County, State and Federal agencies with jurisdiction over such projects to the satisfaction of the Director of Planning and Building.
- At the intersection of Pacific Coast Highway and Studebaker, the roadway will have three departure lanes and two receiving lanes. Specific lane configurations will be determined at the time of design.
- At the 2nd Street and Shopkeeper Road intersection, 2nd Street shall be modified to provide and additional westbound left turn lane (two total) and Shopkeeper Road shall be modified to provide and additional right turn lane (two total). Shopkeeper Road shall also be modified to provide two receiving lanes at the intersection. The traffic signal shall be upgraded to provide a northbound right turn overlap operation.

An analysis was made of the new four-lane connection roadway. Using the regional travel demand model, this proposed link was added to the model. The travel demand model was then run, and the results were compared to the model results without the link that simulated the four-lane connection roadway. The model showed that due to the congestion that exists at the 2nd and Pacific Coast Highway, northbound right turns and westbound left turns at this intersection would tend to use the new connector road, since it has available capacity and is less congested.

Further evaluation of the volumes provided by comparing the two travel demand models, it was found that approximately 89% of the AM northbound right turns (at 2nd Street and Pacific Coast Highway) and 85% of the PM northbound right turns would use the new four-lane connection roadway, and approximately 28% of the AM westbound left turns and 76% of the PM westbound left turns would use the new four-lane connection roadway. These percentages were then applied to the project buildout traffic conditions, and the number of diverted trips was estimated. These trips were then analyzed in the with-project conditions, and assumed a signalized intersection at the south (main) project driveway. The analysis showed that there would be improvement in the level of service at the 2nd Street and PCH intersection and the PCH at Studebaker Road intersection, thus fully mitigating project impacts at those intersections (see

Table 12). However, due to the additional vehicles the would turn at the 2nd Street at Shopkeeper Drive intersection, this intersection would experience a slight increase in V/C, however the intersection would still operate at an acceptable level of service in all analyzed time periods.

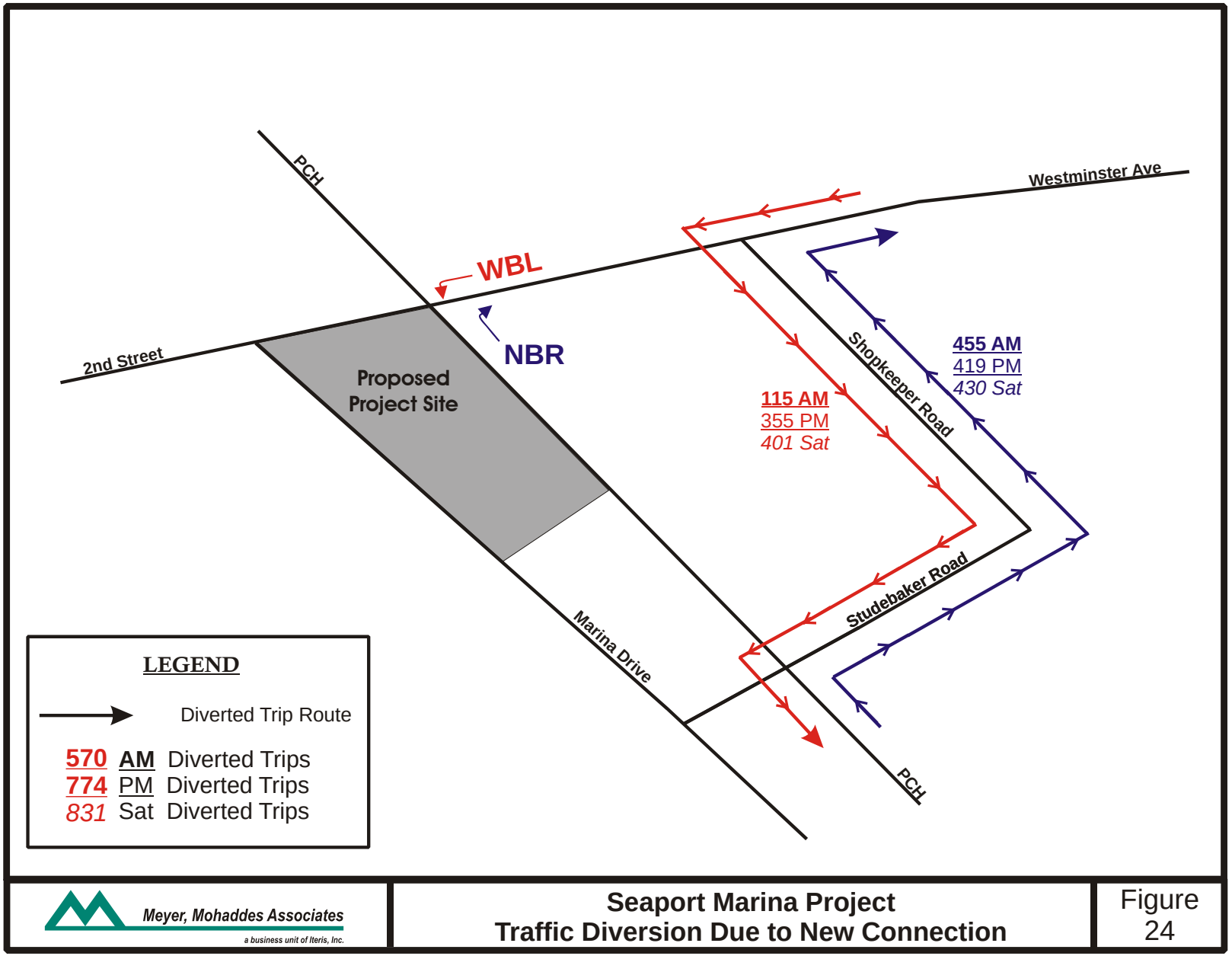
Figure 23 conceptually shows the future four-lane connection roadway, and the proposed lane configurations at the 2nd Street and Shopkeeper Road intersection and the Pacific Coast Highway and Studebaker Road intersection. Figure 24 illustrates the traffic diversion.



Meyer, Mohaddes Associates
a business unit of Iteris, Inc.

Seaport Marina Project
Four-Lane Connection Roadway Configuration

Figure 23



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Seaport Marina Project
Traffic Diversion Due to New Connection

Figure 24

Project Mitigation Analysis

The levels of service without the project, with the project, and with all of the proposed roadway improvements are shown in Table 12. As shown, the project impact is fully mitigated to a level of insignificance during each peak period at 2nd Street / Marina Drive, Pacific Coast Highway / Loynes Drive, 2nd Street / Pacific Coast Highway and at Pacific Coast Highway / Studebaker Road. The intersection of 2nd Street / Shopkeeper Road does not experience an impact in the with-project conditions, but is shown in the table since improvements will take place at this intersection as part of the four-lane connection roadway improvements.

Project Impacts that Remain after Mitigation
Significant project impacts will remain at the following intersections after the mitigation measures are implemented:

- 7th Street / Pacific Coast Highway
- SR 22 Westbound On-Ramp / Studebaker Road
- 2nd Street / Studebaker Road

In addition, the following intersections will require a Statement of Overriding Considerations because proposed mitigation and/or proposed improvements that affect the intersections will require additional agency approvals other than the City of Long Beach:

- Loynes Drive / Pacific Coast Highway (proposed mitigation requires Caltrans concurrence)
- 2nd Street / Pacific Coast Highway (in the event Shopkeeper Road cannot be extended)
- 2nd Street / Marina Drive (proposed new signal on PCH requires Caltrans concurrence)

Table 12
Peak Hour LOS Comparison with Mitigation

Study Intersections	Year 2009 AM								
	Future No Project		Future With Project		Diff	Future With Mitigation		Diff	Significant Project Impact? (Yes/No)
	LOS	V/C	LOS	V/C		LOS	V/C		
Pacific Coast Highway/Loynes Drive	D	0.895	E	0.914	0.019	C	0.729	-0.166	No
2nd Street/Marina Dr	C	0.738	C	0.759	0.021	C	0.725	-0.013	No
2nd Street/Pacific Coast Highway	E	0.960	F	1.020	0.060	E	0.949	-0.011	No
2nd St/Shopkeeper Rd	C	0.701	C	0.718	0.017	B	0.666	-0.035	No
Studebaker Rd/Pacific Coast Highway	E	0.927	E	0.933	0.006	D	0.852	-0.075	No
	Year 2009 PM								
	Future No Project		Future With Project		Diff	Future With Mitigation		Diff	Significant Project Impact? (Yes/No)
	LOS	V/C	LOS	V/C		LOS	V/C		
Pacific Coast Highway/Loynes Drive	F	1.033	F	1.083	0.050	E	0.971	-0.062	No
2nd Street/Marina Dr	D	0.889	E	0.927	0.038	D	0.878	-0.011	No
2nd Street/Pacific Coast Highway	F	1.086	F	1.099	0.013	F	1.093	0.007	No
2nd St/Shopkeeper Rd	D	0.848	D	0.868	0.020	C	0.768	-0.080	No
Studebaker Rd/Pacific Coast Highway	F	1.193	F	1.203	0.010	F	1.001	-0.192	No
	Year 2009 Saturday								
	Future No Project		Future With Project		Diff	Future With Mitigation		Diff	Significant Project Impact? (Yes/No)
	LOS	V/C	LOS	V/C		LOS	V/C		
Pacific Coast Highway/Loynes Drive	E	0.997	F	1.062	0.065	D	0.886	-0.111	No
2nd Street/Marina Dr	D	0.853	E	0.970	0.117	D	0.830	-0.023	No
2nd Street/Pacific Coast Highway	F	1.001	F	1.034	0.033	E	0.989	-0.012	No
2nd St/Shopkeeper Rd	D	0.820	D	0.844	0.024	C	0.792	-0.028	No
Studebaker Rd/Pacific Coast Highway	F	1.043	F	1.060	0.017	D	0.810	-0.233	No

Note: With-Project levels of service assume a signal is in place at the south (main) project driveway on Pacific Coast Highway

Cumulative Project Mitigation Analysis

The same set of proposed mitigation measures were also evaluated at the intersections that would experience a cumulative project impact. As noted earlier, a cumulative impact consists of an impact that occurs when existing conditions are compared to the future with project conditions including all other sources of traffic growth. Table 13 is a comparison of the levels of service between existing conditions and cumulative plus project conditions, with and without mitigation measures in place. As shown, the project mitigation measures do not fully mitigate the cumulative impacts to a level of insignificance, and significant cumulative impacts would remain.

Cumulative Impacts that Remain after Mitigation
The following intersections would experience cumulative project impacts after mitigation:

- Atherton St & Bellflower Blvd
- 7th Street & Park Avenue
- 7th Street & Pacific Coast Highway
- 7th Street & Bellflower Boulevard
- SR 22W On-Ramp & Studebaker Rd
- 2nd Street & Bay Shore Avenue
- 2nd Street & Studebaker Rd
- Pacific Coast Highway & Seal Beach Boulevard
- Pacific Coast Highway & Loynes Drive
- 2nd Street & Pacific Coast Highway
- Studebaker Road & Pacific Coast Highway

Table 13
Peak Hour Cumulative LOS Comparison with Mitigation

Study Intersections	Year 2009 AM								
	Existing		2009 Cumulative Plus Project		Diff	2009 Cumulative Plus Project With Mitigation		Diff	Significant Cumulative Impact? (Yes/No)
	LOS	V/C	LOS	V/C		LOS	V/C		
Pacific Coast Highway/Loynes Drive	D	0.837	E	0.914	0.077	C	0.729	-0.108	No
2nd Street/Marina Dr	C	0.710	C	0.759	0.049	C	0.725	0.015	No
2nd Street/Pacific Coast Highway	E	0.967	F	1.020	0.053	E	0.949	-0.018	No
2nd St/Shopkeeper Rd	B	0.658	C	0.718	0.060	B	0.666	0.008	No
Studebaker Rd/Pacific Coast Highway	D	0.844	E	0.933	0.089	D	0.852	0.008	No
	Year 2009 PM								
	Existing		2009 Cumulative Plus Project		Diff	2009 Cumulative Plus Project With Mitigation		Diff	Significant Cumulative Impact? (Yes/No)
	LOS	V/C	LOS	V/C		LOS	V/C		
Pacific Coast Highway/Loynes Drive	E	0.926	F	1.083	0.157	E	0.971	0.045	Yes
2nd Street/Marina Dr	D	0.849	E	0.889	0.040	D	0.878	0.029	No
2nd Street/Pacific Coast Highway	F	1.028	F	1.099	0.071	F	1.093	0.065	Yes
2nd St/Shopkeeper Rd	D	0.807	D	0.868	0.061	C	0.768	-0.039	No
Studebaker Rd/Pacific Coast Highway	E	0.972	F	1.203	0.231	F	1.001	0.029	Yes
	Year 2009 Saturday								
	Existing		2009 Cumulative Plus Project		Diff	2009 Cumulative Plus Project With Mitigation		Diff	Significant Cumulative Impact? (Yes/No)
	LOS	V/C	LOS	V/C		LOS	V/C		
Pacific Coast Highway/Loynes Drive	D	0.850	F	1.062	0.212	D	0.886	0.036	No
2nd Street/Marina Dr	C	0.781	E	0.970	0.189	D	0.830	0.049	No
2nd Street/Pacific Coast Highway	E	0.928	F	1.034	0.106	E	0.989	0.061	Yes
2nd St/Shopkeeper Rd	C	0.763	D	0.844	0.081	C	0.792	0.029	No
Studebaker Rd/Pacific Coast Highway	C	0.780	F	1.060	0.280	D	0.810	0.030	No

Note: With-Project levels of service assume a signal is in place at the south (main) project driveway on Pacific Coast Highway

System Capacity Management and Enhancement

The City recognizes that the roadways in this area will be more intensely utilized in the future due to this project plus other growth in the area. However, due to the geography of the area, such as the waterways, wetlands, existing roadways and development, it is difficult to undertake an extensive roadway widening program in order to increase capacity in this portion of the City. To assist in better managing roadway capacity constraints the City has identified a series of improvements, both physical and operational, to help improve traffic flow. Physical improvements could include, but are not limited to, adding turn lanes at intersections and roadway restriping to add through and turn lanes. These would increase the increase system capacity and improve the volume to capacity ratio under which project impacts are measured, therefore reducing the project's impacts. Operational improvements could include traffic signal interconnect, traffic signal phasing changes, enhanced street lighting, upgraded traffic signal indicators, among others. These operational improvements, while improving the overall traffic conditions, will not affect the volume-to-capacity calculation on which the impact criteria are based. At the locations where potential impacts were identified and operational improvements are proposed, a significant unavoidable impact may remain after implementation of operational improvements.

System capacity and enhancement measures have been identified by the City for this area. As development projects come on-line, the City will require the new development projects in this area to pay transportation impact fees and/or implement improvements that include and are not limited to:

- Upgrade of SR 22 on-and off-ramp intersections at Studebaker Road, including the reconstruction of traffic signals, enhanced street lighting, etc.
- Traffic signal interconnect along Studebaker Road between 2nd Street and the eastbound SR 22 ramps.
- Restripe northbound and southbound Studebaker Road between 2nd Street and the eastbound SR 22 ramps to add a third through lane in each direction.
- Upgrade of traffic signal indicators along 7th Street between and including East Campus Drive and Pacific Coast Highway.

Note that these are not proposed project mitigation measures and are provided for informational purposes only.

Congestion Management Program System Analysis

The Congestion Management Program (CMP) was created statewide as a result of Proposition 111 and has been implemented locally by the Los Angeles County Metropolitan Transportation Authority (LACMTA). The CMP for Los Angeles County requires that the traffic impact of individual development projects of potential regional significance be analyzed. A specific system of arterial roadways plus all freeways comprise the CMP system. This section describes the analysis of project-related impacts on the CMP system. The analysis has been conducted according to the guidelines set forth in the 2004 Congestion Management Program for Los Angeles County.

CMP Intersection Analysis

The intersection of Pacific Coast Highway and 2nd Street is the only study area intersection that is part of the CMP Arterial monitoring program. For purposes of the CMP, a significant impact occurs when the proposed project increases traffic demand on a CMP facility by two percent of capacity (V/C ≥ 0.02), causing LOS F (V/C > 1.00). If the facility is already at LOS F, a significant impact occurs when the proposed project increases traffic demand on a CMP facility by two percent of capacity (V/C ≥ 0.02). The results of the capacity analysis indicate that with the construction of the four-lane connection roadway (described above) as a mitigation measure, the project will not increase demand at the intersection by two percent (0.020) in any of the analyzed time periods. Therefore, the project will not have a significant CMP impact at the intersection.

CMP Mainline Freeway Segment Analysis

The focus of this analysis is to determine whether project related trips would significantly impact the freeway system according to CMP guidelines and threshold of significance. For purposes of analyzing the mainline freeway impact of the project, the nearest freeway monitoring station is located along I-405 north of SR 22. Table 14 summarizes the project added trips by time period, direction and location. The project added trips were compared with CMP Traffic Impact Analysis guidelines to determine if additional traffic impact analysis is needed at the freeway monitoring station.

As shown in Table 14, the proposed project does not contribute more than minimum threshold of 150 peak-period trips at the closest CMP monitoring location. Based on CMP criteria described previously, detailed impact analysis is not warranted.

Table 14
Project Added Trips at Freeway Monitoring Stations

Freeway Analysis Segment	Project Added Trips by Direction		Traffic Impact Analysis Required?	
	NB	SB	NB	SB
Weekday AM Peak Hour				
I-405 North of SR 22	21	36	No	No
Weekday PM Peak Hour				
I-405 North of SR 22	24	21	No	No

SUMMARY

In summary, the Seaport Marina project would significantly impact seven of 25 study intersections. The project impacts at four of the intersections would be mitigated by the recommended mitigation measures at those intersections. However, the remaining three intersections do not have feasible mitigation measures that would fully mitigate impacts, and would experience a significant and unavoidable impact.

The seven intersections that will experience project impacts, and their impact status after mitigation is:

- 7th St & Pacific Coast Highway – Significant Project Impact Remains
- SR 22W On-Ramp & Studebaker Rd – Significant Project Impact Remains
- Loynes Dr & Pacific Coast Highway – Project Impact Fully Mitigated
- 2nd Street & Marina Drive – Project Impact Fully Mitigated
- 2nd Street & Pacific Coast Highway – Project Impact Fully Mitigated
- 2nd Street & Studebaker Rd – Significant Project Impact Remains
- Studebaker Rd & Pacific Coast Highway – Project Impact Fully Mitigated

The three additional intersections listed under the ***Project Mitigation Analysis*** would have significant project impacts remaining if the related mitigation or improvement is not completed.

Cumulative impacts have also been examined as part of this study. After the proposed project and its related mitigation measures are implemented, cumulative impacts will remain at the following intersections:

- Atherton St & Bellflower Blvd
- 7th Street & Park Avenue
- 7th Street & Pacific Coast Highway
- 7th Street & Bellflower Boulevard
- SR 22W On-Ramp & Studebaker Rd
- 2nd Street & Bay Shore Avenue
- 2nd Street & Studebaker Rd
- Pacific Coast Highway & Seal Beach Boulevard
- Pacific Coast Highway & Loynes Drive
- 2nd Street & Pacific Coast Highway
- Studebaker Road & Pacific Coast Highway.

TRAFFIC APPENDIX

AVAILABLE FOR REVIEW AT THE

CITY OF LONG BEACH CITY HALL